The Croonian Lectures

ON

THE CHEMICAL PRODUCTS OF PATHOGENIC BACTERIA CONSIDERED WITH SPECIAL REFERENCE TO ENTERIC FEVER.

Delivered before the Royal College of Physicians of London on June 14th, 16th, 21st, and 23rd, 1898,

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LECTURE III.[1]

Delivered on June 21st.

Production of the Poisons of the Typhoid Bacillus in Artificial-culture Media.

Mr. President and Gentlemen,—Two different kinds of media were employed in which to grow the bacillus. Ordinary peptone broth was used to determine the presence or not of secretory products of the bacillus and broth containing no peptone but mixed with some proteid solution—either blood serum or alkali albumin made from the spleen or extract of lymphatic gland—in order to determine the presence of digested products of the bacillus. In some cases liquid blood serum sterilised at 60° C. was used without the addition of broth. The virulent bacillus grows well in ordinary peptone broth but the growth in solutions containing much proteid is very much less exuberant. This is especially the case with sterile blood serum and most commonly the bacilli, after growing for a time, sink to the bottom in clumps and cease growing, although they still are alive and active. They grow much better in a solution containing a small proportion of alkali albumin, but still not nearly as well as they do in broth. The object of growing them in the presence of proteids was to test whether there was any digestive action of the bacillus. In one experiment two test tubes were filled about 3 in. deep with liquid blood serum, which was rendered semi-solid by heating at a temperature of from 65° to 70° C. The medium was translucent and one of the tubes was inoculated with the bacillus, the other being kept as a control. It was observed that the bacillus rapidly grew in the medium, spreading through all parts of it, but that no liquefaction indicative of digestion occurred during incubation, which lasted 102 days. When grown in a liquid medium, however, containing a small proportion of alkali albumin, and especially alkali albumin made from splenic pulp, the virulent bacillus has a slight but very insignificant digestive action. Thus in one experiment after the bacillus had grown 32 days in such a medium it was found that the solution gave a distinct biuret reaction with copper sulphate and potash and that the alkali albumin was beginning to be changed into albumoses. This digestive action, although slight, is explanatory of the albumoses found in the spleen in cases of typhoid fever.

Poison formed in proteid solutions.—If the non-virulent bacillus is grown in a solution containing digestible proteid instead of peptone a poison is formed which has an action like that of the poison formed in broth. Thus in one experiment the bacillus was grown in a 1 per cent. solution of serum alkali albumin in broth for 29 days, at the end of which time it was filtered, the filtrate concentrated, and the proteid was separated by alcohol. Some amount of digestion had taken place as the solution gave a biuret reaction. The solid product obtained was injected in two doses (about 0·3 gramme) on successive days into the marginal vein of the ear of a rabbit. There was a marked lowering of the temperature and a subsequent rise following each injection, but not to the average normal temperature of the animal for some days. Some bodily depression was observed on the first two days of the experiment and there was a loss of body weight, but there was no diarrhœa and the animal subsequently completely recovered. In another experiment the non-virulent bacillus was grown in a solution of alkali albumin made from the splenic pulp but without adding broth. One flask was filtered after 45 days and 10 c.c. of the filtrate were injected in two doses on successive days into the marginal vein. After the first injection there was only a very slight rise of temperature which, however, was more marked after the second injection. The animal showed no particular symptoms except a gradual loss of weight, which amounted to 235 grammes at death, on the twenty-eighth day of the experiment. The post-mortem examination revealed no naked eye change in any of the organs or tissues of the body. No cultivations were obtained from the heart's blood; the heart muscle showed no fatty degeneration and there was no degeneration of the peripheral nerves. Another culture was filtered after 59 days' incubation, and 12 c.c. were given in two doses on successive days also into the marginal vein. There was a well-marked rise of temperature after each injection, but no diarrhœa was produced and there was only a slight loss of weight which was recovered from. The animal died in 24 days and no cultivations were obtained from the heart's blood, liver, spleen, or peritoneal cavity. There was subcutaneous hæmorrhage in patches in front of the thighs and in the caudal region, and the peritoneum contained about 1 centimetre of clear fluid. There was no peritonitis and the organs showed no change to the naked eye. The results of growing the non-virulent bacillus in a proteid solution show that the poisons are of the same nature as that formed by the virulent bacillus in broth. The digestion which takes place in the proteid solution is extremely slight and the toxic body is thus mainly a secretion of the micro-organism.

Although the toxic products are developed in the presence of digestible proteids, yet they are most evident when the bacillus is grown in peptone broth. In one experiment the broth was inoculated with the typhoid bacillus obtained from the spleen in a case of enteric fever but before it had been made virulent by passage through animals. The growth was allowed to continue for 11 days, and the broth was filtered through a Chamberland filter. Two injections into the marginal vein were made on successive days. The first injection, of about 3 c.c., resulted in the lowering of the temperature and in the production of diarrhœa soon after the injection. The second injection—also of 3 c.c.—produced but little effect, and on the three subsequent days no appreciable change occurred in the animal. On the sixteenth day of the experiment the animal was found to have lost 170 grammes in weight, and to have some degree of fever, which, however, did not reappear. It lived for 24 days gradually losing weight until at death it had lost 235 grammes. At the post-mortem examination there was no obvious lesion found in any of the organs of the thorax or abdomen, the intestines were normal and cultures made from the heart's blood in the peritoneal cavity were sterile, showing that there was no bacterial infection. The heart-muscle, examined after staining with osmic acid, showed degeneration of most of the fibres, there being loss of striation with longitudinal fibrillation and fatty granules in the muscle cell. This experiment shows several points which will be brought out more fully later: (1) that a poisonous substance is present in the broth apart from the bacillus itself; (2) that this body produces a lowering of temperature and diarrhœa, as well as a loss of weight; and (3) that at death there was distinct degeneration of the cardiac muscle.

The broth culture from the same stock of bacillus was more poisonous and produced a more profound effect if the incubation lasted 25 days. A rabbit received a single dose of 6 c.c. of the broth filtrate after 25 days' growth. The initial effect of this injection into the venous system was a rise of temperature (the maximum being attained in two and a half hours) and a rapid fall, during which there was profuse diarrhœa, with collapse and laboured breathing. This period of depression lasted some hours and was succeeded on the next morning by a febrile rise which continued during the whole of the day. On the following day the temperature was somewhat irregular, but subsequently no great change in the temperature was noticed. The weight fell rapidly up to the fourth day of the experiment, when the animal had lost 120 grammes. Subsequently, however, it regained part of the weight, and at death, on the twenty-sixth day of experiment, the loss was only 35 grammes from the original weight. No naked-eye changes were observed on

[1] Lectures I. and II. were published in THE LANCET of June 18th and 25th, 1898, respectively.

post-mortem examination and no cultures were obtained from the organs of the body. The heart-muscle showed slight signs of degeneration.

The more virulent the bacillus the more toxic becomes the broth. Thus, after growing the virulent bacillus for 11 days the micro-organism was killed by chloroform and the broth mixture centrifugalised, the clear broth being used for the injection. Five cubic centimetres were injected in two doses of 2 c.c. and 3 c.c. respectively on successive days. An initial depression of temperature followed by fever was observed after both injections, and the animal died in 12 days with no naked-eye change in the organs of the body, which gave no bacterial growth. There was a very well-marked degeneration of most of the muscle fibres of the heart. These results may be taken to illustrate the action of the clear broth without the bodies of the bacillus—i.e., of the chemical poison which is present in solution in the broth.

Action of broth with the bodies of the bacillus.—The toxic action of the bodies of the bacillus itself was tested by killing the bacillus with chloroform. When the culture was sterile the chloroform was removed *in vacuo* and the liquid used for injection. In one experiment a 13 days' old culture was used and 4 c.c. were injected into the marginal vein of the ear. There was a fall of temperature in two and a half hours, and this low temperature continued the whole of the first day of experiment and also on the second day. On the morning of the third day the mercury of the thermometer would not rise and the animal died. Soon after the injection there was slight diarrhœa. During the subnormal temperature the animal became increasingly weaker, the fur becoming ruffled, although there was no diarrhœa. The loss of weight in the two days of experiment was 180 grammes. There was no naked-eye change in any of the organs and the blood was sterile. This experiment may be taken as showing the profound effects following the injection of the poison. The great depression of temperature, however, observed in this experiment is not the only effect to be produced. In some of the experiments with a weaker poison no depression ensued, but a well-marked rise of temperature; thus 3 c.c. of a broth culture (seven days' growth) killed with chloroform were injected into the marginal vein of the ear of a rabbit. There was a considerable rise of temperature after the injection, which continued during the whole of the following day and the day after. On the fourth day the temperature partly regained the normal limit and continued afterwards normal. There was a loss of weight up to the seventh day after which the animal recovered. In this experiment no diarrhœa was produced and no symptom except that of fever and loss of weight. In two or three other experiments with the broth and the bodies of the bacillus these features were noted, but there was not infrequently an initial fall of temperature, succeeded by a prolonged rise, and diarrhœa for a longer or a shorter period was a fairly constant symptom. There is no doubt, then, that the retention of the dead bodies of the bacillus in the broth renders it more poisonous. The effect on different animals varies somewhat. In the experiment which was mentioned above 4 c.c. took two and a half days to kill. In another experiment 4 c.c. of the same stock caused death with lowering of the temperature in three and a half hours. There is also some individual peculiarity in the animals as regards their resistance against the poison.

The effect of heat.—The effect of high temperature on this poisonous liquid containing the bodies of the bacillus was tested in order to see whether the toxic substances were sensitive to heat or not. In one experiment the broth with the bodies of the bacillus was heated for ten minutes to 60° and 64°C., 4 c.c. were injected into the marginal vein, and death occurred, with lowering of temperature and diarrhœa, in two hours and twenty minutes. This death was more rapid than in the control experiment with the same amount of broth unheated. As marked was the effect of exposing the broth to a higher temperature before injection. 4 c.c. of a broth mixture heated at the boiling point of water for five minutes were injected into the marginal vein and death with profuse mucoid diarrhœa occurred in two and three-quarter hours. This experiment may be compared with a similar one previously mentioned in which the same amount of broth, but unheated, was injected into another animal which lived for two and a half days with great depression of temperature. It may be said, therefore, that this degree of heat not only does not destroy the poison which is in the bodies of the bacillus, but actually brings out its effects. It may be that the heat breaks up the bodies and liberates the poison inside, and after heating some of the bodies of the bacillus may be observed disintegrated under the microscope. There is no evidence from the experiments that there are two kinds of poison, one extra-cellular or secreted by the bacillus and one intra-cellular, with different actions. The toxic properties of the broth from which the bacilli are separated by means of the Chamberland filter are practically the same, although not so pronounced as those observed when the broth contains the bodies of the bacillus as well. This is not an unimportant point, inasmuch as some have made a distinction between the intra-cellular and the extra-cellular poisons of pathogenic micro-organisms. No effect is more marked or more constant in the action of the poison than the production of diarrhœa which with the more active poison is very profuse, lasting a varying time, sometimes hours, sometimes a day, and consists in the passage of liquid motions, with mucus occasionally, but no blood at any time. On a post-mortem examination of an animal dying from this diarrhœa characteristic appearances are almost invariably found. The stomach may be full of undigested food, the cæcum and colon contain liquid fæcal matter, but the greatest change is in the small intestine which is full of a slightly turbid, sticky fluid, containing but little food and no bile. This liquid is simply a solution of mucin, which may be separated by precipitation with acetic acid. The mucous membrane is a little soft on the surface and there is a very large increase in the number of goblet cells. The Peyer's patches are not apparently altered. The changes described by Sanarelli in the Peyer's patches of the intestines have not been observed by me. The loss of weight is also a constant symptom, and the more virulent the poison the more marked it is seen. It is also in these cases progressive. With a smaller dose of the poison, however, the initial loss of weight is regained. No naked-eye change is produced by the poison in the organs of the body. The effect of the poison, when death of the animal is slow, in producing degeneration of the cell fibre of the heart is well marked. The heart was never found in a state of advanced fatty degeneration, but rather in the earlier stage, in which there is loss of transverse striation of the fibre, with the appearances of longitudinal fibrillation and the presence of numerous granules in the fibre, staining more or less black with osmic acid.

BACILLUS ENTERITIDIS (GÄRTNER).

The experiments with this micro-organism were conducted in the same manner as those with the typhoid bacillus. A culture was kindly sent to me by Dr. Durham which gave the reactions previously described as characteristic of the bacillus. It differs from the typhoid bacillus in the fact that it causes gas formation in glucose-agar or glucose-gelatin, but like the typhoid bacillus it does not coagulate milk and it forms but little or no indol in broth. The original culture of the bacillus worked with was toxic, as 5 c.c. of a two days' old broth culture injected into the peritoneum of a guinea-pig killed the animal in less than twenty-four hours. The virulence of this bacillus was increased by passage through animals in a manner similar to that which has been described with regard to the typhoid bacillus—that is, some of the peritoneal exudation from the first animal which died being injected into the peritoneal cavity of a second guinea-pig, and from the second into a third and so on. The death of each animal occurred as a rule in less than twenty-four hours. The dose was gradually lessened until a small loopful of an agar culture injected into the peritoneal cavity killed the animal. In the series of experiments the intra-peritoneal injections caused the exudation of a highly albuminous fluid containing numbers of bacilli. In the earlier cases there was also an exudation of leucocytes; later on, however, these disappeared. Occasionally there were a few flakes of lymph on the surface of the peritoneum, but only at the early stage of the series of inoculations. At no time was there any exudation of blood. During the series cultivations were made from the peritoneal fluid of each animal to test the purity of the growth, to see whether the bacillus kept its characteristics, and also to study the distribution of the micro-organism in the body. It was seen that the growth was always typical and pure, and that when the bacillus became virulent it was found always distributed throughout the organs of the body, being obtained from the heart's blood, the spleen, the liver, and the kidneys and peritoneal cavity in pure cultivation. In this

respect the presence of the bacillus of Gärtner in the various organs of the body is more constant than that of the typhoid bacillus.

The peritoneal fluid was highly toxic. Thus in one experiment in which the bacilli were killed by means of chloroform and removed by subsequent centrifugalising, 3 c.c. of clear peritoneal fluid injected into the marginal vein of a rabbit weighing 470 grammes caused death in one and a half hours, the temperature rapidly falling in half an hour from 102° to 97·4°. The peritoneal fluid filtered through porcelain is not so toxic as the unfiltered fluid from which the bacilli have been removed by centrifugalising. This filtered peritoneal fluid was found to produce fever when injected into the marginal vein of the ear of the rabbit, but when given in two doses of 1·5 c.c. and 1 c.c. it did not cause the death of the animal nor any particular symptoms except a rise of body temperature.

Growth of the bacillus in broth.—The experiments performed in this way were precisely similar to those with the typhoid bacillus. The virulent Gärtner bacillus was grown in broth for 22 days and the culture was not filtered, but the bacillus was killed by chloroform. Experiments were performed with the clear broth after centrifugalising and with the turbid broth—that is, with the broth plus the bodies of the bacilli. Each animal received the same dose—viz., a single dose of 4 c.c. into the marginal vein. The result of the injection of the clear broth was a continued and marked depression of temperature during the day of experiment, the temperature next day again rising to normal. There was diarrhœa soon after the injection of the poison and there was a progressive loss of weight. A similar dose of the broth, plus the bodies of the bacilli, caused a more marked depression of temperature which lasted till the following morning and most of the following day. Here also there was diarrhœa and a progressive loss of weight. The effect of heat on the broth containing the bodies is seen in the two following experiments. Thus the same dose (4 cc. of the mixture) heated to 60° C. for ten minutes caused a depression of temperature which was very great and ended in death in four and a half hours. This animal also showed diarrhœa. A similar dose heated to 100° C. for ten minutes produced also a very great depression of temperature which lasted to some extent till the next day. There was well-marked diarrhœa and great loss of weight. It is thus seen that the characteristic action of the toxic products of the Gärtner bacillus is very like those of the typhoid bacillus. There is present in the broth from which the bacilli have been removed a poison which causes a great depression of temperature, and this poison is also present in the bodies of the bacillus and has an action similar to that of the poison obtained from the typhoid bacillus—viz., it produces diarrhœa and loss of weight. Like the poison of the typhoid bacillus, the virulence of a broth culture containing the bodies of the bacillus is increased by heating the solution at 60° C., so that, as seen in the experiments just quoted, whereas 4 c.c. of the unheated mixture did not cause death, when it was heated to 60° for ten minutes death occurred in 3½ hours with great lowering of the body temperature. The mixture heated to 100° C. for the same time gives a greater effect than the non-heated mixture, but does not produce death in the same day as when the mixture is heated to only 60° C. The effect of heat appears to be to break up the bodies of the bacillus so that the poison is liberated, making the liquid more toxic. When grown in a proteid solution containing alkali albumin or serum proteids Gärtner's bacillus causes some amount of digestion with the formation of albumoses. This is more marked than is the case with the typhoid bacillus, although the digestion is still far behind that which occurs in the case of the bacillus diphtheriæ and the anthrax bacillus. One result obtained is interesting inasmuch as the bacillus coli also produces it—viz., that when grown in Marmorek's fluid Gärtner's bacillus produces a partial precipitation of the proteid solution in the form of a gelatinous clot. In strong solutions containing serum this result, however, was not observed and it was not so constant as with the bacillus coli.

BACILLUS COLI COMMUNIS.

There is one important difference between this bacillus and the two other forms we have considered (the typhoid and Gärtner bacillus). This is the fact that it is one of the causes of putrefaction of proteids. It forms indol, for example, in proteid solutions; it is found in foul water, in soil, and it is a constant inhabitant of the intestines, being found in that region soon after birth. After death it sometimes penetrates the different abdominal organs and is one of the causes of the putrefaction of the body. These characteristics, therefore, mark it sharply off from the two other micro-organisms. There are, no doubt, many different forms of the bacillus coli which differ in minute particulars, some, for example, forming hardly any indol, others coagulating milk slowly. Without however, entering into the different forms which this bacillus may assume or into a discussion as to whether they are all modifications of the same form I may say that the bacillus I worked with was one which was obtained from the spleen in a case of typhoid fever and which no doubt came originally from the intestinal tract. The virulence of the bacillus coli as obtained from the intestines varies considerably and several observers have described an exaltation and an increase in the numbers of the bacillus in the course of cases of typhoid fever. The bacillus I obtained from the spleen was more virulent than the stock cultures of the bacillus which I had in the laboratory and which were obtained from different sources. Its virulence was readily increased, much more readily than that of the typhoid bacillus or of Gärtner's bacillus. 6 c.c. of a fourteen days' old broth culture injected into the peritoneal cavity of a large guinea-pig caused death in under twenty-four hours; 4 c.c. of a broth culture of the peritoneal exudation of the first guinea-pig was injected into the peritoneal cavity of a second and killed the animal in under twenty-four hours. In the succeeding experiments 2 c.c. of the peritoneal fluid were found to kill; 0·5 c.c. was fatal at the fifth inoculation and at the sixth it was found that 0·25 c.c. and 0·1 c.c. killed the animals in four hours. At this stage the virulence of the bacillus was considered sufficiently exalted for experiments to be performed. Throughout, the cultures obtained from the peritoneal fluid were pure and always gave the typical reactions of the bacillus coli. The results of the injection of the bacillus into the peritoneal cavity differed markedly from those obtained from the injection of the other two bacilli, mainly in the fact that the effusion was blood-stained, more so at first than later, when the bacillus became more virulent. The blood-staining was not due to the exudation of corpuscles but to the colouring matter of the blood being dissolved in the liquid, which was highly albuminous. Numerous petechiæ were also observed, both beneath the peritoneum and the mucous membrane of the ileo-cæcal region and cæcum. No peritonitis was observed at any time. The toxic products of the bacillus were investigated by growing it in broth and in proteid solutions.

Growth of the bacillus in broth.—An early experiment was performed with the bacillus which was not extremely virulent and which was grown in broth for twenty-three days. The broth was then filtered through a Chamberland filter and 8 c.c. of the sterile filtrate were injected in two doses on successive days into the marginal vein of the ear of a rabbit weighing 1090 grammes. The initial effect of the first injection was a fall of temperature in about two hours which lasted over four hours, the total fall of temperature being 5° F. The result of the second injection on the following day was practically *nil*, but on the third day the temperature was subnormal. It then began to rise gradually and there was some degree of fever on the fifth, sixth, and eighth days of experiment, which was markedly increased on the ninth day. On the tenth day there was a fall and a subsequent rise on the eleventh day, after which the temperature of the animal became practically normal. The animal steadily lost weight during the first two days of experiment—100 grammes the first day and 38 grammes the second day, the weight remaining stationary on the third, fourth, and fifth days of experiment, after which it slowly regained its normal. The animal exhibited no other symptom; there was no diarrhœa and complete recovery took place. This result shows that the poisonous products which are formed in the broth by the bacillus coli have the initial effect of reducing the temperature of the body as well as weight and that subsequently there is a reactionary rise of temperature, which remains at a febrile point for several days.

Other experiments were done with the broth cultures in the same way as those done with the typhoid bacillus and with Gärtner's bacillus—viz., after a period of 18 days' incubation the bacilli were killed with chloroform and the injection of the clear broth obtained by centrifugalising and

of the broth with the bodies of the bacilli was performed in different animals. In the first experiment 4 c.c. of clear broth were injected into the marginal vein of a rabbit weighing 720 grammes. In 2½ hours the temperature had fallen 2° and there was slight diarrhœa. In 4½ hours there was a further fall of 2·5° and the temperature altogether remained subnormal for over five hours. On the next day it had regained its normal limit, though the animal continued to lose weight. In the second animal a similar dose of 4 c.c. of the broth containing the bodies of the bacillus were injected into the marginal vein. The temperature fell about 1·5° in two and a half hours, after which it began to rise slightly, and during the whole of the next day the temperature of the animal was febrile. In one and a half hours after the injection there was slight diarrhœa and the animal lost 70 grammes in twenty-four hours. The temperature remained at about the normal level till the fifth day. On the seventh day it had fallen and there was slight diarrhœa. On the eighth day there was a fall to 98° F. and on the ninth day when death occurred the temperature was below 95°. The total loss of weight was 210 grammes. These results were compared with the results of injecting a similar dose of the same stock of broth containing the bodies of the bacillus but which had been subjected to heat. In the first of these experiments the mixture of broth and bodies was heated at 60° C. for ten minutes. The result of the injection was the cause in a very short time of a febrile rise of temperature which lasted the whole of the day and was present in the morning of the following day, the temperature then gradually falling to the normal. In one and a quarter hours after the injection there was profuse diarrhœa and the animal lost somewhat in weight during the first two days of experiment. In another experiment a similar dose was given after being heated to the boiling point of water for ten minutes. In less than an hour after the injection profuse diarrhœa was observed and the temperature rapidly fell, the total fall being 7° F. The animal died in six hours.

It is seen from these experiments that the clear broth—that is, the broth not containing the bodies of the bacillus—produces a fall of temperature and loss of weight with some diarrhœa and that a similar dose of the broth with the bodies of the bacillus causes some lowering of temperature and a reactionary febrile rise and that the effect of heating the mixture of broth with the bodies of the bacillus is to increase the poisonous activity of the solution, so that when the mixture was heated to 100° C. it proved fatal to the animal in six hours with great lowering of temperature. The explanation of this appears to be that the action of the heat causes the discharge of the poison which is present in the bodies of the bacillus. 1. The type of action of the poison of the bacillus coli appears to be the same as that of the other two bacilli investigated, in some cases producing a great fall of temperature and in other cases a rise of temperature. 2. Heating the dead bodies of the bacillus suspended in the broth culture fluid increases the toxicity of the solution, as in the case of the two other bacilli, but in the case of the bacillus coli it requires a temperature of the boiling point of water to effect this, whereas with the other two micro-organisms such a temperature rather diminishes than increases the toxic action. Altogether, the mode of action of the poisonous products of the bacillus coli is more irregular than with the other two bacilli, not only as regards its lethal but also as regards the irregular kind of fever and after-fever produced.

Growth of the bacillus in proteid solutions.—As with the other bacilli, very different forms of proteid solution were used as culture medium—liquid serum, serum diluted with salt solution, serum diluted with broth, alkali albumin in broth, and Marmorek's fluid. The general result obtained in these culture media was that the bacillus coli digested the proteids present and produced an abundance of albumoses (a much greater quantity than the typhoid bacillus and Gärtner's bacillus), so that at the end of a month's incubation of such a culture a brilliant biuret reaction was obtained. The digestion of proteids by the bacillus coli is not nearly so marked as it is with the anthrax bacillus or the diphtheria bacillus. A more remarkable effect was observed in the fact that after the bacillus had been growing in a proteid solution for some time it precipitated the proteid in the form of a clot, and this occurred more particularly in the solutions of diluted serum and in Marmorek's fluid. The results were compared with a control flask which was not inoculated and which was kept in the incubator alongside the cultures. The precipitation of the proteid in the form of a gelatinous clot was not constant although it occurred in the majority of cases. It did not appear to be due to any increased acidity of the culture medium produced by the growth of the bacillus in it, inasmuch as no such increase of acidity was present, the liquid remaining alkaline. The phenomenon appears to be a special action of the growth of the bacillus coli. In some solutions Gärtner's bacillus produced the same result. Thus five flasks were prepared containing about 100 c.c. of Marmorek's fluid, which is a mixture of one part of ascitic fluid with two parts of broth. Two flasks were inoculated with the bacillus coli, two were inoculated with Gärtner's bacillus, and one was kept as a control. In fourteen days a copious and soft clot had formed at the bottom of all the four flasks, the liquid in the control flask remaining limpid and unclotted. In none of the similar experiments with the typhoid bacillus was any clot or precipitation of the proteid observed, so that this serves as another distinction between the typhoid bacillus and the two other bacilli. The clotting of the proteid solution is of interest in connexion with the experiments of Stillmark, who found that the substance called ricin, which is obtained from the seeds of the castor-oil plant and which will be discussed later, also produces a clotting in proteid solutions, especially serum. Stillmark used it as an argument in favour of the ferment nature of the toxic body, ricin.

THE RELATIONSHIP OF SOME FORMS OF COMBINED DEGENERATIONS OF THE SPINAL CORD TO ONE ANOTHER AND TO ANÆMIA.

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INTRODUCTION.

THOUGH the writings of Lichtheim[1] ten years ago first called general attention to the association of symptoms indicating affection of the spinal cord with those of pernicious anæmia, Leichtenstern[2] in 1884 described two cases of what was evidently the same condition, as tabes associated with anæmia. During the decade which has elapsed since Lichtheim's first paper many important communications on the subject have been made which have greatly advanced our knowledge not only of the clinical characteristics of this affection of the spinal cord but also in regard to its etiology and pathology. Among the earlier contributions to the subject two emanated from the National Hospital for the Paralysed and Epileptic, the first by Dr. H. M. Bowman,[3] whose promising career was so early terminated by death, and the second by Dr. James Taylor,[4] whose important communication holds a leading place in the history of the disease. I feel it in a measure my duty, therefore, to record our further experience of the affection at the hospital since the second of these papers appeared in 1895, and I am greatly indebted to Dr. Charlton Bastian, Sir William Gowers, and Dr. Ferrier for allowing me to make use of the cases which form the subject of the present communication. Although a large number of papers have appeared on the subject of the changes found in the spinal cord in cases of pronounced anæmia, and although a few writers have suggested a possible connexion between this condition and that described by Gowers under the title of ataxic paraplegia, no serious attempt has been made to discuss the relationship fully or to establish a connexion between the two affections, if we except an important paper by Rothmann[5] which deals with the whole subject of the primary combined tract affections of the spinal cord. Besides presenting other features of interest the following cases appear to me to afford a good opportunity of discussing

[1] Neurologisches Centralblatt, 1887, p. 236.
[2] Deutsche Medicinische Wochenschrift, 1884.
[3] Brain, 1894, vol. xvii., p. 198.
[4] Transactions of the Royal Medical and Chirurgical Society, 1895, vol. lxxviii., p. 151.
[5] Deutsche Zeitschrift für Nervenheilkunde, 1895, Band vii., p. 171.

the possibility of such a relationship with a reasonable prospect of adding to our knowledge on this subject. I propose therefore to relate briefly the clinical histories of the three cases, to deal much more fully with the morbid changes met with in the spinal cords post mortem, to discuss the etiology and pathology of these and similar cases, and finally to adduce reasons for considering that the affection is the same as that which has been described as ataxic paraplegia.

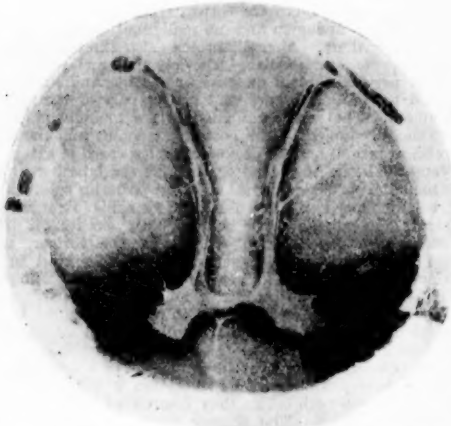
CASE 1.—A married woman, aged forty-four years, was admitted into the National Hospital for the Paralysed and Epileptic on May 11th, 1896, under the care of Dr. Bastian, complaining of loss of power and impairment of sensation in both inferior extremities and the right hand, violent intermittent pain in the stomach and chest, and loss of control over the sphincters. A brother, aged thirty-two years, is the subject of locomotor ataxy, two sisters died in youth from concussion of the brain, and a third from convulsions when teething. She had had seven children, of whom two had died within twenty-four hours of birth, and a third at the age of thirteen months from (?) rickets. She had been a teetotaler for thirty years. Thirteen years before her admission she suffered from a severe hæmorrhage after a confinement and had never regained her strength since. Her catamenia had been regular until the last two or three years when it had become very scanty. She had never had miscarriages and there was no history of syphilis. About a year before she came into hospital she began to suffer from tingling and numbness of her hands and feet, which lasted for two months and then passed off. Since Christmas, 1895, she had gradually become weaker, with shortness of breath on exertion, and about the end of January she began to be clumsy in the use of her feet. She took to her bed in the middle of February and about the end of that month, when she tried to get up, she found that she could not stand. About the beginning of March she began to suffer from cramps in her legs, which at the time of her admission were almost constant when she was awake. She suffered from constipation for a time and this was followed by diarrhœa a week ago, since which the motions had been passed involuntarily. A day or two before she came under observation she noticed some difficulty in using the right hand, which became numb and began to tingle. On admission she was found to be emaciated, her skin and mucous membranes were very pale, and there was marked œdema of her ankles, feet and tissues over the sacrum. She was only able to move her lower extremities feebly and was much troubled by twitchings and cramps, the latter extending up into the abdomen. The power of movement of the right arm was also impaired. The muscles of the limbs were much wasted, but no tenderness was elicited on pressure. There was partial loss of sensibility of the lower extremities and right arm, and she was not often able to detect touches on the right side of the trunk. Painful impressions were not felt on the legs and thighs and there was an inability to appreciate heat and cold below the level of the umbilicus on the right side and below the pelvis on the left. The knee-jerks were brisk, there was ankle clonus on both sides, and the plantar reflexes were very brisk. There was absolute incontinence of urine and fæces, with inability to feel when the evacuations were passing. There were no cerebral symptoms and the cranial nerves were intact. Hæmic murmurs were heard over the precordia and in the neck. Hæmoglobin was 28 per cent., the red cells were much diminished, and nucleated red cells were present in relatively large numbers. The pulse was 78, the respiration was 16, the morning temperature was 98·6° F. and the evening temperature was 99°. Subsequently the knee-jerks became abolished, there was œdema of the conjunctivæ, diarrhœa set in, she developed a bedsore on the sacrum, began to be delirious, and eventually died on June 11th, 1896—i.e., one month after admission, and a little more than a year from the commencement of her illness.

Necropsy.—I made the post-mortem examination nineteen hours after death and found the body extremely emaciated, of a yellowish-white colour, with no abnormal pigmentation, and with œdema of the lower part of the back, ankles, and feet, and a large bedsore on the sacrum. The subcutaneous fat was exceedingly small in amount and the marrow of the long bones was natural. The skull and dura mater were natural, but the cerebral convolutions were shrunken, with compensatory œdema of the pia-arachnoid. The brain was otherwise natural on macroscopic examination, as were the cerebellum, pons, and medulla. The cranial nerves were natural and there were no retinal hæmorrhages. The bones and meninges of the spinal canal were natural, as was the appearance of the spinal cord even on section, no sclerosis or other change being obvious to the unaided eye in the fresh condition. There was a slight excess of bright yellow clear fluid in the pericardium; the left pleural cavity contained about half a pint and the right a few ounces of similar fluid. There was no tabby striation of the heart and there were no hæmorrhages anywhere. Both lungs were emphysematous, with œdema and hypostatic congestion more pronounced on the right side. The liver was slightly fatty and did not give the iron reaction. The spleen was natural; the capsules and the kidneys were adherent, but there was no obvious reduction of the cortex. There were no enlarged glands in the abdomen and no malignant disease was discovered anywhere. A small fibroma existed in the uterus.

Microscopic examination.—The changes met with in the central nervous system on microscopical examination were limited to the spinal cord and caudal part of the medulla oblongata. The regions affected in the medulla oblongata were those occupied by the posterior columns and the direct cerebellar tracts, but the degeneration appeared to extend far beyond the limits of the latter tract in the lateral region of the medulla. The degeneration in the posterior columns was more pronounced in the funiculus gracilis than in the funiculus cuneatus, and the cells of both were intact. Next to no recent degeneration existed in the former, while there was considerable degeneration of this kind in the funiculus cuneatus and direct cerebellar tracts. The restiform body showed no obvious change in sections prepared by the Pal-Weigert method, but in those prepared by the Marchi method an extensive amount of recent degeneration was seen in these structures passing to the cerebellum. The pyramids were intact with the exception of a few scattered fibres in a recent state of degeneration which were seen in these structures both before they decussated and among the decussating fibres. The arcuate fibres passing from the posterior column nuclei were intact and the emergent fibres of the hypoglossal nerves showed no degeneration, though there was marked pigmentation of the cells of their nuclei. The essential changes in the spinal cord consisted in a degeneration of the nerve elements, thickening of the neuroglia, and marked vascular changes. In the cervical region of the cord the degeneration was most pronounced in the postero-internal columns and the cornu commissural and posterior root zones on both sides. Some of the postero-external column was preserved, though there were only scattered fibres, the degeneration being very marked even in this part of the posterior columns. A band of healthy fibres, however, separated the grey matter from the more altered parts of the posterior columns, this being especially well marked at the cornu commissural region and posterior horn; but even in these parts there were many fibres in a recent state of degeneration. Indeed, the fibres showing early degenerative changes were more numerous in these better preserved parts of the posterior columns, and in the areas bordering on them, rather than in parts where the degenerative changes were more pronounced and obviously of longer standing. The lateral region of the spinal cord on each side was similarly affected to the posterior columns; here diffuse degenerative changes existed in both crossed pyramidal tracts and in the direct cerebellar and posterior part of the antero-lateral ascending tracts. Healthy fibres in the lateral limiting layer separated the grey matter from the profoundly altered lateral columns, but even among these fibres there were many in a recent state of degeneration, a condition which, as in the posterior columns, was most marked in the areas of junction between the obviously pronouncedly degenerated and the apparently healthy fibres of this part of the cord. There was marked degeneration of one direct pyramidal tract and slight of the other; there were also two islets of degeneration in the region of the ground bundles on the side of the more affected direct pyramidal tract, and one small islet in the position of the anterior part of the ascending antero-lateral tract a little ventral to the anterior horn. The precise degree of degeneration and its distribution varied at different levels; thus sections from another part of the cervical cord showed only slight affection of the direct pyramidal tracts, though the one was more affected than the other, as was the case in the other section described; but the islets of degeneration in the ground bundles only existed on the side of the more affected direct pyramidal tract. In the thoracic region of the cord, as in the cervical, the precise distribution of the degeneration varied but the main characteristics were

constant (see Fig. 1). Thus there was marked degeneration of the posterior columns with a zone of healthy fibres separating the degenerated areas from the grey matter. Intermingled with the healthy fibres were many in a state of recent degeneration, this being markedly the case in the cornu-commissural zone also. The degeneration in the lateral region of the cord occupied the crossed pyramidal and direct cerebellar tracts, and in the lateral limiting layer where the fibres were in the

FIG. 1.



Transverse section of the thoracic region of the spinal cord in Case 1.

main preserved there were many in a condition of recent degeneration, a state of things common to the margins of all the areas of healthy fibres bordering on the pronouncedly degenerated parts. In the anterior columns the morbid change extended beyond the confines of the ventral portion of the direct pyramidal tract on each side and to a lesser degree on one side in that part of the tract immediately ventral to the anterior commissure, while this part of the direct tract

FIG. 2.

Transverse section of the lumbar region of the spinal cord in Case 1.

on the opposite side was free from any change. In no part of the transverse area of the cord did the distribution of the degeneration vary so much as in its ventral portion; thus in other sections from the thoracic cord while the amount of change was different in the two anterior columns as before, in neither was that part of the tract immediately ventral to the anterior commissure affected. In other sections, again, not only the ventral portions of the direct pyramidal tracts were degenerated, but also the antero-lateral margin of the cord and the ground bundles to a point opposite the outer limit of the anterior horn.

In the lumbar cord (see Fig. 2) the postero-internal column was markedly degenerated with the exception of that part of it occupied by fibres of the septo-marginal tract and the fibres of the cornu-commissural zone, both of which had escaped. A marginal area of healthy fibres also existed in the dorsal portion of the posterior columns, but was less marked in the postero-internal than in the postero-external column, considerable portions of other parts of which tract had also escaped. A wide band of healthy fibres separated the grey matter from the more altered parts of the postero-external tract. Fibres in a state of recent degeneration existed in fair numbers in all parts of the posterior columns except the most changed parts of the postero-internal tracts. Such fibres undergoing degeneration were evident in the septo-marginal tracts, but were less so in the band of healthy fibres bordering on the grey matter, while the cornu-commissural zone had escaped in great part even from such early degeneration. In the lateral region of the cord the degeneration was limited to the crossed pyramidal tracts, all parts of the transverse area of the cord ventral to this being free from degeneration, with the exception of the tip of the anterior column on one side where it abutted on the anterior fissure; here there was slight degeneration. A considerable number of recently degenerated fibres existed in the crossed pyramidal tracts, and some in the ventral part of the direct tract, which showed no obvious change when treated by the Pal-Weigert method. There was also a considerable amount of recent degeneration present in the apparently healthy parts of both direct tracts, but more marked on one side than on the other. Similar variations were met with as in other regions of the cord; thus the degree of affection of the cornu-commissural zone was more marked in some sections than in others; the amount of the septo-marginal tract which escaped also varied as did the degree of affection of the ventral tip of the anterior column. The lower lumbar region of the cord was the seat of pronounced degeneration of the posterior columns, though this was not complete in any part of them, healthy fibres being scattered among the degenerated. There were, however, certain parts of these columns which had largely escaped degeneration, an occasional degenerate fibre being alone found in them; these areas comprised the cornu-commissural zone, the septo-marginal tract, the external part of the posterior columns bordering on the grey matter of the posterior horn, the posterior root zone, and a very narrow band of fibres extending along the periphery of the dorsal part of the posterior columns except that part of them close to the posterior median septum. Only a few scattered degenerated fibres were seen in the lateral columns and in the antero-lateral region of the cord. The lower sacral region was free from degeneration with the exception of a few scattered fibres in the posterior columns, while the upper part of this region was similarly spared with the exception of a few small areas of degeneration in the posterior columns. On both sides there was a limited area of such degeneration abutting on the inner border of the posterior root zone and a more pronounced band occupying the dorsal third of the posterior column on one side, situated a little internal to a line which, if extended to this region of the columns, would represent the inner border of the gelatinous substance of Rolando and a similar, though less extensive, band than the last, situated in the ventral half of the dorsal fifth of the posterior columns, close to the posterior median septum, from which it was separated by an area of normal fibres no broader than the degenerated band itself. A degenerate fibre here and there in other regions of the transverse area of the sacral cord was all that was to be seen. The neuroglia was much thickened in the affected areas of white matter. The vessels had thickened walls and were engorged, these conditions characterising both those in the affected areas of white matter and in the grey. In the sacral region of the cord, where the degeneration of the white matter was so limited in distribution, the thickening of the neuroglia was equally limited and vascular changes were by no means conspicuous. Though some of the vessel walls were thickened there was little engorgement and no obvious increase in the number of vessels in the grey or white matter. The nerve cells of the anterior horns were scarce in most parts of the cord

and of those present many were obviously atrophied and others though of good size stained badly. These cells were better preserved in the sacral region of the cord than elsewhere, but even here some groups were wanting and others showed evidences of atrophy. In sections prepared by the Marchi method the anterior horn cells throughout the cord were characterised by marked pigmentation and granularity, a condition of things also seen in the cells of Clarke's columns.

Remarks.—We have in this case a typical example of the spinal cord changes which have been described as occurring in association with pernicious anæmia. Clinically the case conformed to this type and the results of the microscopical examination are strictly in accord with those which are regarded as characteristic of this affection. The case, however, serves to emphasise what has already been shown by certain previous observations—viz., that such changes in the spinal cord and their resulting symptoms may occur in all forms of profound anæmia even though they do not conform absolutely, either clinically or as regards the changes found post mortem, to the rules laid down for the diagnosis of the so-called pernicious variety of anæmia. Thus among other signs wanting in this case were the absence of retinal or other hæmorrhages (apart from those in the spinal cord), the normal condition of the marrow of the long bones, and the failure of the liver to give the iron reaction. The special features which call for comment as regards the changes found in the spinal cord on microscopical examination, in that they have not been constantly met with in all cases of the kind previously recorded, are the changes in the grey matter, there being both altered condition of some of the cells and the existence of small hæmorrhages. It is also worthy of note that no hæmorrhages or the remains of these were met with in the white matter, where the degenerative changes of the nerve elements are so pronounced, and that small areas of degeneration in otherwise healthy parts occur quite independently of the presence of any vessel with altered walls in their neighbourhood. One other point alone calls for comment in this case and that is that in the lower lumbar and sacral regions of the cord the posterior columns are almost exclusively affected. This is not a little curious when we remember how profoundly affected the lateral and antero-lateral tracts were in other regions of the cord, for with such affection of these tracts we are at least justified in expecting to find evidences of descending degeneration in the crossed pyramidal tracts and the efferent antero-lateral tracts, including the direct pyramidal, instead of which there is no evidence of such degeneration, an occasional degenerated fibre being alone found in these tracts in the lower lumbar and the sacral regions of the cord.

CASE 2.—A man, aged fifty-three years, was admitted to the National Hospital for the Paralysed and Epileptic under the care of Dr. Ferrier, on Oct. 16th, 1896, complaining of inability to walk, difficulty in commencing the act of micturition, and girdle sensation. His father died from "consumption of the bowels" and his mother had been paraplegic for five years, the condition having been gradual in onset. A sister had died from phthisis, another from dropsy, and a third with wasting. The patient had been much exposed to wet and cold. Twenty years before his admission to the hospital he suffered from gleet, but never had a sore. He had always been temperate. At the age of twenty-six years he had pains in his calves for three or four days and then woke up one morning quite blind and unable to sit up or move his head, arms, or legs. He could swallow and had no difficulty in passing urine. His limbs were flaccid. By the end of the same day he could move his head and by the end of the second day could see with his left eye and was practically well, except that he could not see with the right eye and was unable to stand for about seven weeks. After this he got quite well, though blind in the right eye, and remained so until a year and nine months before he came under observation, when he began to notice that he was unable to bear the heat of a fire on his legs. The bedclothes and the lining of his trousers felt damp, whereas in reality they were quite dry. These subjective feelings at first got worse and then disappeared about seven months ago; but at this time he had a sensation as if walking on wool, his legs became uncertain in their movements, and he had to use sticks in walking. His walking had become gradually worse and he had been quite unable to do so at all for three months. A month before this he developed a girdle sensation which had persisted and at the same time micturition became precipitate. On admission he was found to be the subject of advanced spastic paraplegia. Both legs were extremely stiff, but he could lift them off the bed, could flex and extend at the hip fairly, and he could draw up the legs and move the toes and feet at the ankles well. By far the weakest movement was flexion at the knees. The left leg was possibly slightly the stronger. A girdle sensation was present and there was some pain complained of in the lower dorsal and lumbar regions of the back. There was slight blunting of sensibility for tactile and painful impressions up to the level of the umbilicus. The knee-jerks were increased but there was no ankle clonus. The arms were normal. There was divergent strabismus of the right eye due to blindness from simple optic atrophy, there being only just perception of light with this eye and the pupil only just reacting to light. The ocular movements were normal, there was no nystagmus, and the other cranial nerves were intact. About five weeks later he was much weaker and apparently very anæmic; he suffered a great deal from pain about the lower ribs and in the abdomen, and there was almost complete retention of urine. The great rigidity of the inferior extremities had now altogether disappeared, the limbs became flaccid at all the joints, and there was slight wasting of the calves and thighs on both sides, with great diminution of Faradaic irritability of the muscles of the buttocks, thighs, and legs. To galvanism K.C.C. > A.C.C. The knee-jerks were completely absent, there was no ankle clonus, the plantar and cremasteric reflexes could not be obtained, and the reflex of the sphincter ani was also absent. The epigastric and abdominal reflexes were, however, present. There was complete loss of sensibility for touch and pain up to the knees and marked impairment to two inches above the groins. The skin over the buttocks and sacrum became acutely inflamed, with superficial points of ulceration. The heart was dilated and a slight systolic murmur was heard at its apex. The temperature was 100·4° F. Two days after this he was slightly weaker and the temperature was subnormal, but the bedsore was slightly better. Four days later he died.

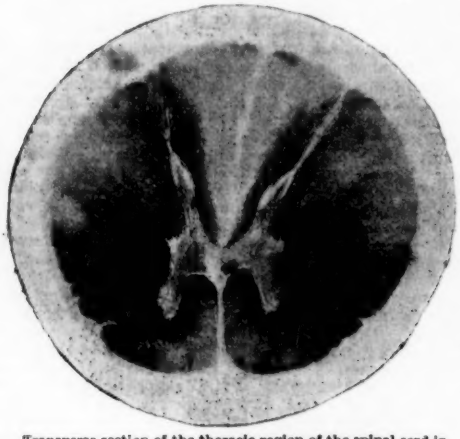
Necropsy.—I made the post-mortem examination nine hours after death and found the bones of the skull natural but the dura mater unduly adherent to the inner surface of the skull-cap. The pia-arachnoid presented old patches of thickening, but the convolutions were natural, as were the rest of the brain, the cerebellum, pons, and medulla oblongata, on macroscopic examination. All the cranial nerves appeared natural with the exception of the right optic nerve, which was much atrophied and grey in colour. The spinal canal was natural, as were the meninges and cord, both on external examination and on section. No sclerosis or other defect was evident to the unaided eye in the fresh state. The heart was dilated, the lower lobes of the lungs were in a condition of hypostatic congestion, with old caseous and pleuritic thickening with adhesions at the apex of the right lung. The abdominal viscera were natural, with the exception of very slight adhesion of the capsules of the kidneys, without any obvious reduction in the width of the cortex, and there was hæmorrhagic cystitis.

Microscopical examination.—Subsequent microscopical examination of the central nervous system revealed the following changes. In the medulla oblongata the degenerations were limited to the caudal end. There was pronounced degeneration of the fibres of the funiculus gracilis and cuneatus, the cells of which were intact, as were the emergent arciform fibres. The lateral region of the medulla occupied by the direct cerebellar tract was greatly altered, and extending dorsally and ventrally along the margin of the medulla from the most changed part were a few scattered degenerate fibres with a little patch of them opposite the commencement of the anterior horn on one side and a larger patch just external to the pyramid on the opposite side. There was some degeneration in both pyramids at the level of the decussation; in one it was the part bordering on the anterior median fissure which was chiefly affected, while in the other there were two patches of degeneration separated from each other and from the anterior median fissure by healthy fibres. Degenerated fibres could also be seen among those decussating. Some small foci of degeneration and scattered altered fibres were present in the pyramids for a short distance above the decussation; otherwise the medulla was free from obvious change after the upper limits of the funiculus gracilis and cuneatus were reached and after the direct cerebellar tract had passed into the restiform body. In the

cervical region of the spinal cord there was marked degeneration of the postero-internal columns, having all the appearance of being complete, as seen with a low power lens, and separated from the degenerated part of the postero-external column by a narrow band of more or less normal fibres. The postero-external column was much less degenerated and only about the inner half of the tract was affected, the outer part bordering on the grey matter of the posterior horn being preserved. There was, however, a limited area of this outer zone of the postero-external column which was profoundly degenerated near the periphery of the cord in the region of the posterior root zone. The cornu-commissural zone was fairly preserved, but in this as well as in the best preserved parts of the postero-external column many degenerate fibres and spaces from which such swollen degenerate fibres had evidently fallen out were to be seen. The direct cerebellar tract on one side was considerably degenerated about its middle, while the ventral portion was less altered. Dorsal to the more altered part was a less degenerate area, while immediately external to the posterior root was an area of more intense degeneration at the periphery of the cord. On the other side of the cord the ventral part of the direct cerebellar tract was most altered, the middle less so, while the dorsal part of it was as much affected as was the area immediately external to the posterior root. There was degeneration of a patchy and scattered character in the crossed pyramidal tracts; this was less evident in the deeper parts of these tracts and the lateral limiting layer was in the main well preserved. Both direct pyramidal tracts were markedly degenerated in their ventral two-thirds, while only isolated degenerate fibres were dotted about in the portion of the tract immediately ventral to the anterior commissure. The degeneration overstepped the limits of these tracts and extended into the ground bundles and antero-lateral descending tract region at the periphery of the cord; but in both these regions the degeneration outside the area of the direct pyramidal tracts was in the shape of scattered fibres rather than of any compact cluster of these. A few minute islets of scattered degenerate fibres were also seen at the periphery of the cord to about midway between this and the grey matter of the anterior horn.

In the thoracic cord (see Fig. 3) the postero-external

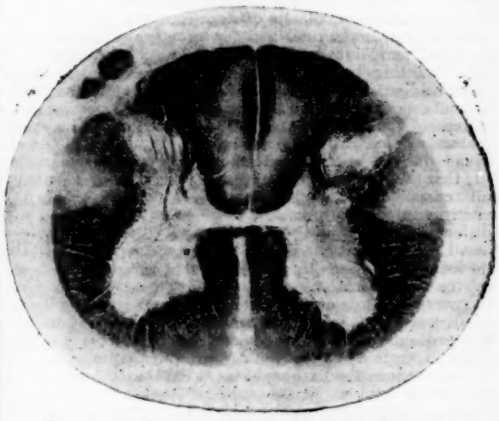
FIG. 3.



Transverse section of the thoracic region of the spinal cord in Case 2.

and internal columns were more equally affected, and the degeneration was less pronounced than it was in the latter tract in the cervical region, being, indeed, more comparable to that seen in the former tract in that region of the cord. Very little of the cornu-commissural zone was preserved at the ventral extremity of the postero-internal column, but at the dorsal end of the tract at the periphery of the cord was a small zone of more or less healthy fibres. A similar condition existed to a lesser degree in the contiguous part of the postero-external column, the whole of the outer half of which tract was also preserved, with the exception of the posterior root zone which was markedly degenerated. The change in the direct cerebellar tracts was considerable, and the crossed pyramidal tracts were more profoundly altered than in the cervical region of the cord, the degeneration being rather more extensive in area on one side than on the other. The lateral limiting layer was fairly preserved. There was marked degeneration of the ventral three-fourths of the direct pyramidal tracts and degenerate fibres in the other fourth, more especially on one side. An extensive overflow of degeneration into the antero-lateral descending tract region and ground bundles was seen, the area of the ventral portion of the cord thus occupied by degeneration being very much more extensive than in the cervical cord. A few scattered degenerated fibres were seen in the white matter between this ventral area of degeneration and that of the crossed pyramidal and direct cerebellar tracts. In the lumbar region of the cord (see Fig. 4)

FIG. 4.



Transverse section of the lumbar region of the spinal cord in Case 2.

there was marked degeneration of only a part of the posterior columns. The septo-marginal descending tract was well preserved, as were the cornu-commissural zone and the outer part of the postero-external column bordering on the posterior horn and root. The whole of the periphery of the cord between the posterior root and posterior median septum, including the posterior root zone, was fairly preserved. There was marked degeneration of the crossed pyramidal tracts and the change was limited to their confines. A patchy and scattered degeneration existed in the direct pyramidal tracts and antero-lateral region at the periphery of the cord, with some scattered degenerated fibres in the ground bundles. Here and there a degenerate fibre was seen between the ventral area of degeneration and the lateral columns. In the sacral cord the septo-marginal descending tracts in the posterior columns were well preserved, while a limited narrow strip of marked degeneration existed on each side just external to them, somewhat patchy and of different extent and distribution on the two sides. A little scattered degeneration was also seen external to this more altered area. The cornu-commissural zone was intact on both sides. The crossed pyramidal tracts were degenerated but there was no evidence of degeneration in the direct pyramidal tracts or antero-lateral region of the cord. In addition to the degeneration of the various tracts of nerve fibres there were pronounced changes in the grey matter, consisting in destructive changes in the cells, diminution in the number of the fine nerve fibres which coursed through it, and increased vascularity. The degree of destruction of the nerve cells of the anterior horns varied at different levels. Some sections of the cervical cord showed that a large number of the cells had disappeared, others were markedly atrophied, while here and there small groups of apparently unaffected cells were seen. In other sections the groups of intact cells were much larger, while in some while there was a marked diminution in the number of cells of one anterior horn in the other the changes were much less pronounced. The same may be said of the thoracic region of the cord, where there was a great sparcity of cells and a great many of those present were atrophied. Similar

changes were seen in the lumbar cord but fewer cells were atrophied, while many of those present appeared to be swollen. The cells were plentiful in the sacral cord but many appeared to be somewhat swollen, while the peri-cellular space in some cases was so large as to suggest a certain amount of shrinking of the swollen cells. There was an increase in the number of vessels in the affected areas of white matter, especially the posterior columns; the majority of the vessels had greatly thickened walls with multiplication of nuclei, some appeared to be hyaline, and all were intensely engorged. Pronounced as were these vascular changes throughout the cord in no other part was there so great an increase in the number of capillaries met with as in the lumbar region, where there was a perfect meshwork of small thin-walled engorged vessels in addition to larger vessels with thickened walls. The neuroglia was thickened in the affected area but there was no infiltration of the tissues with round cells, nor were there any perivascular collections of these, and though the vessels were so engorged no hæmorrhages could be detected.

Remarks.—It would serve no useful purpose if we were to speculate as to the nature of the past illness which resulted in the patient's losing the sight of his right eye. A sufficiently long interval elapsed to justify our assuming that there was no direct connexion between that illness and the condition which resulted in his death. The earlier part of the clinical history of the last illness conformed to what we regard as more or less characteristic of ataxic paraplegia, while the subsequent development of anæmia and muscular flaccidity and abolition of the reflexes, together with the rapidly fatal issue, were in keeping with one class of cases of combined cord changes associated with anæmia in which the anæmia only becomes obvious late in the course of the illness. The changes met with in the spinal cord post mortem are such as are seen in ataxic paraplegia and in the cases of spinal cord changes associated with anæmia. It is obvious, therefore, that this case goes far to prove that there is a very close relationship between these two forms of affection of the spinal cord, if, indeed, they be not eventually proved to be identical. It is interesting to note that in contrast to the first case the changes in the sacral region of the cord are most pronounced in the crossed pyramidal tracts and are only slight in the posterior columns, the reverse of that which obtained in the other case.

CASE 3.—A married woman, aged fifty years, was admitted into the National Hospital for the Paralysed and Epileptic on Dec. 19th, 1894, under the care of Sir William Gowers, complaining of weakness in her arms and legs, numbness and tingling in her hands and feet, girdle sensation, and loss of control over the sphincters. Her father died from apoplexy at the age of sixty-three years; one brother had died from variola and another from rheumatism but otherwise the family history was good. She had been married thirty years and had had two sons and one daughter who had survived, while eight children had died in infancy, and she had had one miscarriage. The patient had not suffered from any previous illness, had always been temperate, and had lived in comfortable circumstances; but for six months she had nursed her husband, who died from phthisis five months before she came into hospital. She became ill after her husband's death, feeling great weakness in the lower limbs which caused her to fall about, and in a fortnight's time she was obliged to take to her bed and had not been up for more than a few hours since. At the commencement of her illness she noticed numbness and tingling in her hands and feet, and she had since suffered from girdle pains at the level of the umbilicus but had never had any cramps or lightning pains in the limbs. For three months she had been unconscious of passing her evacuations and both urine and fæces had been passed in her bed; the former did not dribble but passed in a stream; she was not, however, conscious of any desire to pass urine. There had never been any diplopia. On admission there was no loss of power noted in the lower extremities as she lay in bed, and the upper extremities, though relatively not so strong as the lower, presented no definite loss of power. She was unable to raise herself from the horizontal to the sitting posture and was unable to stand alone, and when supported she lifted her feet rather high and stamped them down in walking. There were no contractures, the knee-jerks were equal, there was no ankle clonus, the elbow-jerks were absent, and it was doubtful if any jerks could be elicited at the wrists. The inferior extremities felt cold and stiff, there were tingling and numbness in the fingers and feet, pain in the lumbar region of the spine and in the hypogastrium, with a girdle sensation just above the pubes. There was a loss of tactile sensibility over the right inferior extremity up to the level of the brim of the pelvis in front and to the fold of the buttock behind, with inability to recognise pin-pricks below the knee in front and up to the middle of the thigh behind. In the left leg there was slight blunting of sensibility for tactile impressions up to the middle of the thigh in front and to just below the fold of the buttock behind and there was blunting to pin-pricks over the same area. The plantar reflexes were equal and brisk, while the abdominal reflexes were not obtained. The fundi were normal, the pupils responded normally, there was no nystagmus or ocular paralysis, and the other cranial nerves were also intact. Ten days later the patient complained of bearing-down pain in the abdomen and back; there was retention of urine and incontinence of fæces, and from this time her urine had always to be drawn off by means of a catheter. She was unconscious of the passage of urine and occasionally of the passage of fæces also. A fortnight after this the knee-jerks became extremely feeble and in about two months from the time of her admission they were abolished. The lower limbs were drawn up, flexed at all the joints, and rigid, resisting attempts at passive movement. There were absolute loss of power in the lower extremities, with loss of muscular sense, inability to sit up in bed, and great weakness, unsteadiness, incoördination and loss of muscular sense in the upper extremities, while the intercostals and diaphragm acted fairly well. There was loss of sensibility for tactile and painful impressions up to the brim of the pelvis in front and up to the tenth dorsal spine behind, except the back of the left thigh where there was only blunting and over the lower third of this thigh in front where there was loss of sensibility for painful impressions but where tactile sensibility was only blunted. On the trunk tactile sensibility was blunted up to the level of the fourth rib on the right side and the third rib on the left side. The patient's replies were not to be relied on when the arms were tested, except that she always felt a pin-prick. As regards tactile impressions she sometimes said she could feel while at other times she said she could not. Her urine had always to be drawn off, there was complete loss of control over the sphincter ani, and she was unconscious of the act of defecation. Her general condition was very bad; there was marked general wasting, not limited to any parts specially, with marked tendency to trophic disturbance in the shape of a sacral bedsore and a small black patch on the right heel. So, too, two drops of hot water dropped on the chest gave rise to sores, which at first sloughed, but afterwards healed. The sacral bedsore also improved under treatment. About this time she developed general bronchitis. A week or two later the patient began to wander and to suffer from delusions at night; but during the day, though dull and slow, she remained fairly clear mentally. Her fundi were examined the day before she died and were found to be normal. The fatal termination of the case resulted on March 10th, 1895—i.e., about eight months after the commencement of her illness.

Necropsy.—At the post-mortem examination, performed by Dr. W. S. Colman fourteen hours after death, the body was found to be very thin, with a bedsore over the sacrum. The brain was found to be much wasted, with a large amount of compensatory fluid beneath the arachnoid, but the organ was otherwise natural to the unaided eye, as were the cerebellum and pons, but the medulla low down showed some degeneration in the posterior columns. The cranial bones and meninges were natural, as were those of the spinal cavity. The external appearance of the spinal cord was natural, but on section some discolouration was noticed in the posterior columns down to the lumbar enlargement, while none could be seen in the sacral region of the fresh cord. There was nothing else noteworthy beyond the fact that the liver was enlarged and tough, its capsule thick and opaque, and its lobules very distinct (no iodine reaction). The spleen was enlarged and soft and the kidneys were very tough, with a little thinning of the cortex.

Microscopical examination.—I subsequently made the following microscopical examination. The medulla oblongata only showed changes towards its caudal end, and these consisted in marked degeneration of the fibres of the funiculus gracilis and cuneatus on each side and similar degeneration of both direct pyramidal tracts, all of which changes were obvious in sections stained by Pal-Weigert method. Specimens prepared by Marchi's method showed

more recently degenerated fibres in the funiculus cuneatus than in the funiculus gracilis, and in both nearly all such fibres were seen in the deeper parts bordering on the grey matter, though some also were seen at the dorsal periphery of the funiculus cuneatus. Fibres in a recent state of degeneration were also seen throughout both direct cerebellar tracts, but most in the deeper parts of both tracts bordering on the formatio reticularis. This method further revealed recently degenerated fibres in large numbers in the restiform body on each side and a few scattered degenerated fibres in the pyramids, which fibres could be seen crossing at the decussation of these structures. Examination of the spinal cord showed that in the cervical region, as seen with a lens of low magnification, there appeared to be a complete absence of normal fibres in the postero-internal column, even the cornu-commissural zone sharing this fate. The postero-external column was also degenerated, though less markedly than the postero-internal, and a band of healthy fibres separated the grey matter from the altered part of the postero-external column. This zone of healthy fibres was most marked in the ventral part of the tract and existed only as a very thin band in the dorsal part of it. Fibres in a recent state of degeneration were conspicuous by their absence, very few being seen except in the zone between the grey matter and the ventral part of the more pronouncedly degenerated area of the postero-external column. There was marked degeneration in the lateral region of the cord, occupying chiefly the confines of the crossed pyramidal, direct cerebellar, and posterior part of the antero-lateral ascending tracts. In parts there was almost as complete a disappearance of nerve fibres as in the postero-internal columns, but on the whole the change was less pronounced than in these tracts. The lateral limiting layer was preserved. Recently degenerated fibres were scattered throughout the lateral columns, in some parts of which they were numerous while in others they were scarce. There were a considerable number in the ventral part of one crossed pyramidal tract and they were also numerous in the lateral limiting layer. The ventral part of the direct cerebellar tract and the dorsal part of the ascending antero-lateral tract were similarly occupied by a considerable number of such fibres in a recent state of degeneration. There was a moderate amount of degeneration in the direct pyramidal tracts and, as seen in the specimens prepared by the Pal-Weigert method, the change was most marked in the ventral part of these tracts, though slight throughout along the margin of the anterior median fissure. Ventrally the area of degeneration tended to encroach on the antero-lateral

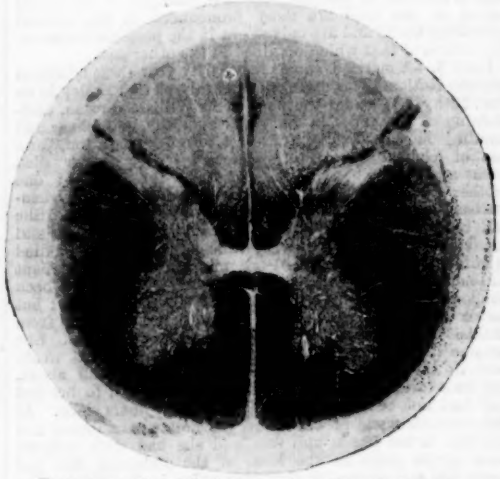
FIG. 5.

Transverse section of the thoracic region of the spinal cord in Case 3.

descending tract region of the cord and two islets of degeneration were present in the course of this tract on one side, one opposite the anterior angle of the anterior horn and the other opposite a point midway between this and the lateral horn. A few fibres in a recent state of degeneration were scattered through the direct pyramidal tracts.

Sections from the thoracic cord (see Fig. 5) showed that the postero-internal columns were as markedly changed as in the cervical region, and that the degeneration of the postero-external columns was more pronounced than in the upper regions of the cord, being in great part as advanced as that seen in the postero-internal columns. The cornu-commissural zone was, however, more preserved than in the cervical cord and the band of healthy fibres separating the grey matter from the degenerated part of the postero-external column was more extensive. Fibres in a recent state of degeneration were present in both these zones of apparently healthy fibres, the number of these varying at different levels. The amount of degeneration of the lateral tracts of the cord was more extensive in area, as was that of the ventral portion of it, so that a smaller amount of apparently normal white matter separated the lateral degenerated area from that in the ventral portion of the cord. Less of the lateral limiting layer was preserved on one side than on the other, and recently-degenerated fibres were seen in these better-preserved parts. Such fibres in a recent state of degeneration were also present in the crossed pyramidal tracts and chiefly in one direct cerebellar tract, though they were present in the other also. The precise distribution of these fibres varied at different levels, so that in some sections they were much more scattered and irregularly distributed in the lateral columns than in others. The anterior columns were only affected in their ventral half as seen in specimens prepared by the Pal-Weigert method, with marked extension of the degeneration into the adjacent ground bundles and antero-lateral marginal tract to opposite the external limit of the anterior horn, but even in the healthy part there was evidently a sparseness of normal fibres in the region between the anterior and lateral columns of the cord, especially a short distance from the periphery. Exceedingly few recently-degenerated fibres were, however, seen in the changed and unchanged parts of the anterior columns. In the lumbar region of the cord

FIG. 6.



Transverse section of the lumbar region of the spinal cord in Case 3.

(see Fig. 6) the most pronounced degeneration of the posterior columns was in the middle third of the postero-internal tract, with the exception of that part of it occupied by the fibres of the septo-marginal tract which was preserved. The cornu-commissural zone and a band of fibres between the grey matter and the degenerated part of the postero-external columns were also preserved. Otherwise a scattered degeneration was present in the posterior columns. Recently-degenerated fibres were also scattered through these tracts, but were most marked in the better preserved parts, such as the cornu-commissural zone, the septo-marginal tract, and the band of fibres bordering on the grey matter. Next to no recently-degenerated fibres were seen in the most altered parts of

the posterior columns. The caudal end of the lumbar region was characterised by marked degeneration of the posterior two-thirds of the postero-internal column, the anterior third of the posterior columns, including the cornu-commissural zone, being intact. The septo-marginal tract was only fairly preserved, there being scattered degenerated fibres in it. The postero-external column was less degenerated than the postero-internal, and the zone of fibres bordering on the grey matter was preserved, as was also a very narrow peripheral zone at the dorsal end of both posterior columns. There was marked degeneration of Lissauer's tract, while the crossed pyramidal tracts were only slightly degenerated and the other tracts of the cord were practically intact. In the sacral region a little scattered patchy degeneration was to be seen in the posterior columns, especially in the dorsal part of the postero-external column, where there was a fairly well-defined patch of degeneration on one side. At the caudal end of the sacral cord, however, there was practically no degeneration except of Lissauer's tract, which was considerably degenerated, though to a less extent than in parts less caudally situated.

As in the two other cases so here there were changes in the grey matter, vessels, and interstitial tissue of a pronounced character. The anterior horn cells had largely disappeared in the cervical region, a few atrophied ones remaining in places, while other small groups of cells were fairly preserved, though even these stained badly as a rule. Similar changes were seen in the thoracic cord, where the cells were even more scarce. Few cells were preserved in the cephalic end of the lumbar cord, but towards the caudal end of this region of the cord it was chiefly the ventral part of the anterior horn that was poor in cells, and those remaining here were markedly atrophied. In contrast to other parts of the cord the anterior horns in the sacral region were rich in cells. In some sections, however, there was a sparseness of them, while others were obviously atrophied. Throughout the cord sections stained by Marchi's method showed the cells to be markedly granular and the majority stained black. Many of the fine fibres in the grey matter stained badly, while others were obviously degenerated. The vascular changes consisted in thickening of the vessel walls, some to such an extent as to almost occlude their lumina, marked engorgement of them, and a large increase in the number of capillaries in some parts. The grey matter of the sacral cord was crowded with engorged capillaries, while vessels with thickened walls were only seen here and there. In the lumbar cord the capillaries were fewer than in the sacral, while vessels with thickened walls were more plentiful. The latter form one of the chief features of the vascular changes in the thoracic and cervical regions of the cord, and such vessels were seen in the affected tracts of white matter as well as in the grey. Indeed, another feature of the thoracic, and more especially of the cervical, cord was the great increase in the number of vessels in the affected parts of the posterior columns. No hæmorrhages were to be seen either in the affected grey or white matter. There was much thickening of the neuroglia in the affected areas of the cord, and this change was most pronounced where the degeneration of the nerve elements was most intense—viz., the posterior columns, especially the postero-internal tracts.

Remarks.—This case is an admirable instance of the occurrence of the clinical features and morbid changes which characterise cases of spinal cord changes in anæmia in a patient in whom if anæmia was present it was not sufficient to attract attention and in whom neither during life nor after death were the signs by which we recognise pernicious anæmia detected. It is noteworthy, however, that although there was no obvious anæmia a condition of profound marasmus existed. Like the other two cases subjective sensory disturbances and inability to coördinate the movements of the inferior extremities were among the earliest manifestations of the disease. Spasticity was never a prominent feature during the time that the patient was under observation, sensory defects, muscular enfeeblement, and ataxy being the leading symptoms pointing to affection of the nervous system. But, as in the other cases, the final stages of the disease were characterised by abolition of the reflexes, flaccidity, and loss of control over the sphincters. As regards the degenerations in the spinal cord, it is noteworthy that their distribution in the lower lumbar and sacral regions of the cord was rather intermediate in type as compared with what was met with in the other two cases, but that it conformed more to the condition met with in the first case than to that met with in the second in that the changes were more pronounced in the posterior columns than in the lateral tracts in these regions of the cord.

General Remarks.

A comparison of the clinical histories of the foregoing three cases is alone sufficient to convince one that they belong to the same category of affections of the spinal cord, and any doubt which may have existed on this point could not reasonably be entertained after comparing the morbid changes met with and their distribution in the three cords. It is equally evident that the clinical manifestations and the nature and distribution of the morbid processes are such as have been described as typical of a group of cases in which symptoms indicating the existence of disease of the spinal cord are associated with profound anæmia. But the character of the nervous symptoms, their mode of onset, progress, and termination, harmonise fairly well with what is met with in ataxic paraplegia, the rate at which one event succeeds another and eventually terminates in death within one or two years from the commencement of the illness being alone contrary to what we have been in the habit of regarding as characteristic of this affection. This rapid progress to a fatal termination corresponds rather to what we would expect in some more or less chronic slowly progressive form of myelitis. The morbid changes met with on post-mortem examination, however, exclude this possibility, while they are quite in keeping with what we are in the habit of finding in cases which clinically present the features of ataxic paraplegia. While there is this general resemblance of the three cases to each other, and they collectively present features characteristic of a certain group of diseases which form a clinical and pathological entity, they individually serve to throw light on certain side issues with regard to the etiology and pathology of the disease of which they are examples. The first case is one in which the association of profound anæmia with the spinal cord changes is unquestionable, but in that the anæmia did not conform either clinically or post mortem to the rules which have been laid down for the diagnosis of the pernicious variety the case serves to emphasise the fact that such spinal cord changes may occur in profound anæmias not having all the characteristics of so-called pernicious anæmia. The second case furnishes an example of the fact that the symptoms of the spinal cord affection may precede any evidence of anæmia and that for a very considerable period of time, in this case about a year and ten months. Of the three cases perhaps this serves more than any of the others, at any rate clinically, to show how close is the association between the cases of combined sclerosis occurring in anæmia with those of so-called ataxic paraplegia or postero-lateral sclerosis. The third case makes it clear that cord changes indistinguishable from those which have been described in profound anæmia may occur without any obvious anæmia throughout the short clinical course of the affection. The patient was, however, markedly debilitated and in a condition of extreme marasmus and it is quite possible that had she lived longer anæmia might have been a late feature in this case as in the second here recorded.

That a close association exists between the changes in the spinal cord and profound anæmia in some cases is beyond question, but it appears equally certain that the cord changes cannot be attributed directly to the anæmia from an etiological point of view, as has been supposed to be the case by some writers. The fact that cases occur, like the third here recorded, in which anæmia, if present, has at any rate not been sufficiently prominent to attract attention argues strongly against the view that the spinal cord changes depend on the anæmia. So, too, instances have been recorded by Nonne,[6] Minnich,[7] Arning,[8] Teichmuller,[9] and Bödeker and Juliusberger[10] where, like the second case, the clinical manifestations of the spinal cord affection preceded any obvious signs of anæmia, which further argues against this view. Another consideration which is opposed to this hypothesis and to which sufficient weight has not been given is the fact that the number of cases of spinal cord changes of this kind is small compared with the large numbers of profound anæmias met with from

[6] Archiv für Psychiatrie, 1893, Band xxv.
[7] Zeitschrift für Klinische Medicin, 1892, Band xxi.
[8] Inaugural Dissertation, Leipzig, 1896.
[9] Deutsche Zeitschrift für Nervenheilkunde, 1896, Band viii.
[10] Neurologisches Centralblatt, 1896.

various causes, even if we excluded the cases of chlorosis in young girls. Even in these Nonne would expect cord changes to occur, for in concluding that all anæmias of a progressive character may lead to degenerations in the spinal cord he asks if it is not possible for them to exist in cases of chlorosis also. It has been suggested that phenomena such as the absence of knee-jerks sometimes met with in cases of chlorosis may indicate a minor degree of a similar change which in the graver forms of anæmia becomes of so pronounced a character. I, however, venture to contend that the two conditions are not strictly comparable. Prévost[11] showed experimentally that depriving the lumbar centres of blood by compression of the abdominal aorta abolishes the knee-jerks, and I have shown[12] that the same thing occurs in general anæmia produced by bleeding and in cases in which asphyxia is artificially induced. So that if the spinal centres to which the knee-jerks are related be deprived of blood or supplied only with blood containing an excess of carbonic acid the knee-jerks are abolished. While the excess of carbonic acid may have something to do with this result in the case of asphyxia, reasons are given elsewhere[13] for regarding the want of oxygen as the more potent factor in both cases. My contention, therefore, is that in cases of chlorosis in which the knee-jerks are abolished or in which temporary paraplegia occurs such phenomena ought to be attributed to this starving of the spinal centres of oxygen leading to a condition of functional inactivity rather than to the action of an agent so powerful as that which is responsible for the profound changes met with in the spinal cord in cases of combined sclerosis whether associated with anæmia or not. The experiments of von Voss[14] are important in this connexion, for though he succeeded in inducing pernicious anæmia in animals by artificial means and in keeping them alive for periods up to twenty-four weeks, he could find no changes in their spinal cords such as have been found in these cases of combined degeneration in man.

A further argument which might be advanced against the view that anæmia is the cause of the combined degenerations of the spinal cord that have been met with in its association is that profound degenerations of the kind have not been met with in the severe anæmia which occurs in leucocythæmia, lymphadenoma, malignant disease, and the like. Too much cannot be made of this, however, for it is possible that the association has been missed through ignorance of the possibility of such an occurrence, and it may be that systematic examination of such cases in future with this object in view may reveal that such an association is very much more common than we supposed. A striking and instructive instance of the need for caution in this connexion is supplied by a case recorded by Michell Clarke[15] in which symptoms of spinal cord lesions were masked by those due to profound anæmia. Further, Eisenlohr[16] and Müller[17] have each found lesions of the peripheral cranial nerves in lymphatic leukæmia, and changes in the medulla oblongata have been found respectively by Kast[18] and Alt.[19] Then, again, Müller[20] observed a case of leukæmia with slight sclerosis of the postero-internal and to some extent of the postero-external columns, increasing in degree from the lumbar to the cervical part of the spinal cord with increase and thickening of the neuroglia and falling out of nerve fibres. Patches of degeneration were also found in the anterior and lateral tracts. And Nonne[21] has recorded two cases of leukæmia in which there were no nervous symptoms during life, but in which he found patches of degeneration in the anterior, lateral, and posterior columns non-symmetrically distributed. There was in addition in one of the cases sclerosis of the postero-internal columns throughout the cervical cord and slight symmetrical sclerosis of the outer part of this tract and median part of the postero-external column in the cephalic end of the thoracic cord. In spite of cases of this kind which appear to support the views of those who regard anæmia as the cause of the spinal cord degenerations now under consideration the bulk of the evidence is opposed to this hypothesis. It appears to me to be more reasonable to suppose, as has been done by Lichtheim, Minnich, Taylor, and others, that the anæmia and spinal cord changes are the result of a common cause in the form of some toxic state of the blood. I do not, however, concur with Taylor, whose opinion is shared by Michell Clarke, in supposing that the degenerations may in part be the result of the hæmorrhages which take place in the spinal cord, and which are regarded as comparable to those which occur in the retina, brain, and other parts in pernicious anæmia. It may be that the presence of such hæmorrhages in the spinal cord is to be so accounted for; but in that they have also been found in cases of combined degenerations of the spinal cord in which anæmia was not a feature in the clinical history, the hæmorrhages may be the result of the action of a toxin on the walls of the spinal cord vessels whether the poison is or is not capable of inducing anæmia also. We are, of course, familiar with hæmorrhages of the kind in connexion with the action of various toxins on the central nervous system. That they form no essential part in the etiology and pathology of the spinal cord affection under consideration is proved by the fact that the most pronounced degeneration of the nerve elements may be met with in these cases throughout the spinal cord, without any hæmorrhages or their remains being detected. Further, in that such hæmorrhages have been commonly met with in the spinal cord in cases of severe anæmia without clinical manifestations of spinal cord symptoms, and without any change at all comparable to that of the combined degeneration type, it is reasonable to suppose that had they anything to do with the condition now under consideration they would be met with more frequently, in view of the large number of cases of severe anæmia which occur. Anæmia may play a part, and that a not unimportant one, in reducing the resistive power of the nerve elements so as to render them less able to withstand the baneful influence of some toxin, a property which anæmia would share with other debilitating influences and cachectic states. Thus it may come about that anæmia or other impoverished states of the system, themselves dependent on the action of some toxin, may in their turn render the nerve elements more susceptible to the action of the same or it may be some other poison.

In cases like the third, and one recorded by Rothmann, in which without obvious anæmia a condition of general malnutrition and marked cachexia was associated with the spinal cord affection, it is impossible to believe that the nervous system does not share in the general impoverishment, and whether the toxic agent had commenced its special action of destruction on the particular tracts affected in the combined sclerosis before or after the nervous system had commenced to share in the impoverished state of the body generally, the lowered state of nutrition of the nerve elements could not fail to facilitate the special action of the toxic agent on the particular tracts of the cord found degenerated, whether that degeneration is dependent on the action of the same poison which induced the general cachexia or whether some altogether different toxin is responsible for it.

The admission by most observers that the changes in the spinal cord are the result of the action of a toxin, though an important step in our knowledge of the etiology and pathology of these combined degenerations of the cord, leaves much to be further elicited. Thus Rothmann regards the affection of the white matter as endogenous in origin and the result of a primary affection of the grey matter. Teichmüller also regards the change in the grey matter as important and looks on both the tract affection and scattered areas of degeneration in the white matter as the result of small hæmorrhages. Pétion[22] similarly looks on the sclerosis as consequent on small hæmorrhages, while Nonne[23] attributes the changes in the white matter to patches of acute myelitis occurring in the earlier stages of the affection, and Bödeker and Juliusberger hold a similar view in that according to them the affection is to be regarded as a disseminated myelitis, which has a predilection for certain tracts of the spinal cord. The existence of so many different views on this question must, in part at any rate, be due to the opinions of writers being based on the particular conditions found in the cases which have come under their

[11] Revue Médicale de la Suisse Romande, February, 1881.
[12] Proceedings of the Royal Society, vol. liii., 1893.
[13] Loc. cit.
[14] Deutsches Archiv für Klinische Medicin, 1897, Band lxviii., p. 489.
[15] Brit. Med. Jour., 1897, ii., p. 325.
[16] Virchow's Archiv, 1878, Band lxxiii.
[17] Inaugural Dissertation, Berlin, 1895.
[18] Deutsche Zeitschrift für Klinische Medicin, 1895, No. 28.
[19] Wiener Medicinische Wochenschrift, 1896, No. 21.
[20] Loc. cit.
[21] Deutsche Zeitschrift für Nervenheilkunde, 1897, p. 165.
[22] Norddeutsches Medicinisches Archiv, 1896, N.F., Band vi., and Neurologisches Centralblatt, 1896, p. 747.
[23] Neurologisches Centralblatt, 1896, p. 137.

individual observations, for a general survey of the whole subject, giving due weight to the changes found in all the recorded cases, does not, it appears to me, admit of such diversity of opinion. Any view which attributes the changes in the white columns of the cord to a primary affection of the grey matter appears to me to be erroneous in that in no small proportion of the total number of recorded cases the grey matter has been found intact, while in a large number of cases in which changes have been found in the grey matter they have been slight and insignificant compared to the degeneration of the white matter, so that the latter could not possibly depend on the former changes. Moreover, there is a wonderful symmetry in the affection of the white matter, while changes in the grey matter when present are irregularly distributed as a rule. A further argument against this view is to be found in the fact that the parts of the white matter which chiefly escape are largely those the fibres of which are of endogenous origin.

The view which supposes the degenerative changes in the various affected tracts of the cord to be due to small hæmorrhages is equally untenable, for in many cases there are no hæmorrhages present nor can the slightest traces of former hæmorrhages be detected. Even when hæmorrhages are present they are too few too small and too scattered to possibly account for degenerations affecting tracts symmetrically and in their entirety throughout so large a part of the spinal cord and producing so profound an alteration as to result in the complete degeneration of certain of them in parts of their course. Moreover, did larger hæmorrhages occur at certain points in the cord so as to interrupt the greater parts of the same tracts on both sides, we should find some evidence of ascending degenerations of certain tracts above such lesions with their escape, at any rate in part, below them and of descending degenerations of other tracts below such hæmorrhages with partial or complete escape of the same tracts above them. Not only have no such large hæmorrhages ever been met with, but the distribution of the degenerations in the cord quite precludes such a possibility. It is only necessary to remember that in most of these cases the degeneration both in the posterior and lateral columns is most pronounced in the cervical and upper thoracic cord and that it diminishes in degree and extent in both pairs of tracts as we pass towards the cephalic and caudal extremities respectively.

The hypothesis which, while not regarding the degenerations in the cord as secondary to hæmorrhages, nevertheless assumes that they are of vascular origin in the sense that the degeneration commences in the immediate vicinity of vessels with altered walls, owes its origin to the observations of Nonne and Minnich, who both found areas of degeneration surrounding such vessels with altered walls. But as von Voss has pointed out, and as I can fully confirm, such areas of degeneration are often seen in the neighbourhood of perfectly healthy vessels, while on the other hand vessels with markedly changed walls may be seen in parts of the cord free from degeneration, and, further, small areas of degeneration occur with no vessel of any kind in their immediate neighbourhood. Burr [24] rejects the vascular theory owing to the fact that he examined the spinal cords in seven cases of pernicious anæmia and in all but one found changes present although he scarcely ever found changes in the blood-vessels. That the topographical distribution of the degeneration of the white matter of the cord depends on the vascular distribution there can be little question. This will be obvious if it is borne in mind that the blood-supply of a given transverse area of the cord is derived from two sources, the anterior median arteries in the anterior median fissure and the peripheral arteries. The former supply the grey matter of the anterior horns and the white matter bordering on them and the neck of the posterior horn including Clarke's columns, while the latter supply the whole of the rest of the white matter of the cord. The distribution of the affection of the white matter of the cord in these cases of combined degeneration is precisely that of these peripheral vessels.

We have seen that cases occur in which there is affection of both regions of these different vascular supplies—viz., the grey as well as the white matter; but we have also seen that there are other cases in which the changes are limited to the area of supply of the peripheral vessels. Why there should be this escape of the area of supply of the anterior median arteries in some cases is not clear; but this much seems certain—viz., that the affection of regions supplied by the peripheral vessels does not depend on pachymeningitis in these cases, as has been supposed by Marie to account for certain forms of combined sclerosis. Difficult as these differences are of explanation they are no more curious than is the fact that in an admittedly infective disease like acute anterior poliomyelitis there should be affection of the area of supply of the anterior median artery alone, while that of the peripheral arteries escapes entirely. This belief that the morbid condition owes its topographical distribution to the vascular distribution must not be interpreted as meaning that I am of opinion that the degenerations of the spinal cord are vascular in the sense that they depend on changes in the vessel walls, whose impermeability leads to impoverishment of the nerve elements. That such thickening of vessels occurs and that when it occurs it cannot fail to affect the nutrition of the parts supplied by such vessels is admitted; but that this is the primary cause of the degeneration of the nerve elements is far from my belief, in that cases have been recorded in which with extensive degeneration of the nerve elements no changes in the vessel walls have been detected. I regard the changes in the vessel walls as rather depending on the same cause as the parenchymatous degeneration of the nerve elements, and that the only part played by the vessels in the initiation of the morbid changes in the nerve elements is that of bringing the toxic material to them.

We have lastly to consider the view of Nonne and of Bödeker and Juliusberger, who regard the degeneration as the result of disseminated myelitis. The objection which has been advanced against considering the degenerations as the result of hæmorrhages to the effect that parts of certain tracts should be affected above such lesions and should escape below, while others should be affected below and escape above, is equally applicable in the case of myelitis. Then, again, although we see all stages, including what appears to be the earliest of the changes in the spinal cord, we never meet with a round cell infiltration of the tissue so characteristic of changes of inflammatory origin. What, then, are we to regard as the mode of origin of the changes met with in the various nerve tracts of the spinal cord? The answer appears to me to be simple. We have already admitted that a toxin is responsible for the production of the spinal cord changes, and nothing appears more natural than that this toxic body (whatever may be its chemical nature) should by its action on the nerve elements result in a parenchymatous degeneration of them. Such a theory accords best with the changes found and with their distribution. The most reasonable explanation which can be offered as to why some parts of the cords are affected and others are not is that all parts of the central nervous system are not equally prone to be deleteriously affected by one and the same toxic agent, and that while certain parts are exceedingly easily damaged by one poison others have a peculiar power of resistance to the action of such a toxin, while it may be that these very parts are much less able to resist the action of some other toxin which may have little or no effect on the parts so susceptible to a poison having different properties.

Another question which deserves fuller consideration than I have already given it in this paper is how far we are justified in regarding all the cases of combined sclerosis of the spinal cord as belonging to the same category. That there are many totally distinct diseases in which tracts of different function are simultaneously affected, or in which the affection of tracts of a certain function is followed by similar affections of other tracts of entirely different functions, is obvious; but there also appear to me to be conditions in which the tracts are so affected, and which are at present regarded as distinct from each other, which should be regarded as identical. As coming within the former category I would instance the following. 1. Cases of tabes with affection of the crossed pyramidal tracts, those with degeneration of the direct cerebellar tracts alone or in conjunction with the crossed pyramidal tracts. 2. Cases of primary lateral sclerosis in which the posterior columns become secondarily affected or in which the direct pyramidal and direct cerebellar tracts are involved and the posterior columns remain normal. (The only recorded cases of the latter are open to question in that the posterior columns may have been affected in the upper unexamined part of the cord in one case and in that Goll's columns were intensely stained by carmine in the

[24] University Medical Magazine, April, 1895.

cervical region in the other case.) 3. Combined sclerosis of the posterior and lateral columns in general paralysis of the insane. 4. Friedreich's hereditary ataxy. In the second category I would include all those cases in which, with or without the presence of anæmia, degeneration occurs in tracts of different function in the spinal cord simultaneously or in quick succession and in which, irrespective of the duration of the clinical history or the precise order of occurrence of the phenomena dependent on affection of the tracts, there is found post mortem degeneration of the posterior columns, the crossed and direct pyramidal tracts, and the direct cerebellar tract. But it will be obvious that further subdivision of this great group will be necessary if we are to include in it conditions with so wide a difference in length of clinical history as the cases which we have been considering and those described by Gowers as ataxic paraplegia. Let us consider what justification there is for including in this group those acute cases in which, without anæmia, there occur symptoms attributable to affection of the spinal cord indistinguishable from the symptoms which occur in the cases associated with anæmia, the anæmia cases and those which have been described under the title of ataxic paraplegia. Sir William Gowers's description of the clinical features of the last condition leads me to conclude that its course is essentially chronic. While true of many cases, however, exceptions certainly occur to the rule, if, indeed, the rule is still to hold good now that with a wider experience of the condition we find that so many cases presenting the clinical and pathological pictures of ataxic paraplegia differ from it only in one or two minor details, including a shorter clinical course. If we allow that cases of ataxic paraplegia may run a subacute or even an acute course, then there seems little or nothing to separate this class of cases from the cases of combined cord changes which have been described in anæmia. How closely similar the conditions are is well exemplified by two cases recorded by Wagner [25] as instances of postero-lateral sclerosis in the sense that we would regard them as cases of ataxic paraplegia, but which, if a distinction is to be drawn between ataxic paraplegia and the cord changes which occur in anæmia, must unquestionably be relegated to the latter category. Oddly enough, however, Wagner does not appear to have been struck by the similarity of his cases to those which have been described in association with anæmia, although the morbid changes met with are indistinguishable from those found in the cases of anæmia. Further, one of his cases was markedly anæmic and in one the duration of the illness was only six months, while in the other it was two years. To admit that these cases are examples of ataxic paraplegia is to admit that this affection may run a subacute course, and such an admission also involves the necessity of our regarding all these cases of combined sclerosis as belonging to the same class—that originally known as ataxic paraplegia—irrespective of the length of the clinical history and as to whether anæmia was a feature in the case or not. Such a view would not be out of keeping with what we know of other diseases of the nervous system which owe their origin to the action of poisons, whether these are generated in the body or introduced into the system from without, for all such affections present marked variations as regards acuteness and chronicity and as regards the extent and intensity of the resulting morbid process. That such should be the case is only what is to be expected in that the rate of progress and the amount of damage done must of necessity depend largely on the virulence of the poison, its amount, and the resistive or other antagonistic properties possessed by the tissues on which it acts. If, as seems highly probable, therefore, the combined degenerations of the spinal cord owe their origin to the action of some toxic substance, there is no reason why such degenerations should not present all degrees of variation in their rate of progress and why the same poison should not generate the more chronic process of "ataxic paraplegia" and the more acute changes in precisely the same tracts of the spinal cord in the cases of anæmia and of cachectic conditions in which the resistive powers of the nerve elements must of necessity be lessened, whether these states of the general system were in existence before the poison commenced its special destructive action on the nerve elements or only became pronounced subsequently to this. From what has been said it will be seen that there is much which suggests a close relationship between ataxic paraplegia and the acuter forms of postero-lateral degeneration, but it would be premature to regard them as identical for there are some links in the chain of evidence which are still wanting.

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[25] Deutsche Zeitschrift für Nervenheilkunde, 1897, Band xi., p. 1.

HÆMATURIA AS A SYMPTOM: METHODS EMPLOYED IN MAKING A DIFFERENTIAL DIAGNOSIS;

WITH 19 CASES ILLUSTRATING POINTS OF INTEREST IN THE DIAGNOSIS OF RENAL AFFECTIONS CHARACTERISED BY THE PRESENCE OF BLOOD IN THE URINE.

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THE appearance of blood in the urine during micturition is a symptom of a large number of different lesions and, as seen in surgical practice, may have its origin in any of the divisions of the urinary tract. Hæmaturia may be due to (*a*) lesions of the renal parenchyma or the pelvis; (*b*) disease of the ureters; (*c*) disease of the bladder; (*d*) disease of the prostate; (*e*) disease of the urethra; and (*f*) disease of the testicles. In this paper I shall endeavour in the first instance to discuss in a general way the characteristics of the urine in local lesions of the urinary tract in which hæmaturia is a prominent symptom and will describe in detail the exact methods which should be employed in making a differential diagnosis. Having done so, I shall classify the lesions of the urinary tract which are commonly associated with hæmorrhage and then describe in detail and illustrate fully by selected cases the etiology and symptomatology of renal hæmaturia. While in this communication only hæmaturia from lesions of the kidney will be illustrated by cases, I hope at a future time to publish a series of cases of disease of other portions of the tract in which the passage of blood in the urine was a prominent symptom and I shall then discuss the general question of treatment. I shall now refer to lesions of other portions of the urinary tract only in so far as it is necessary for differential diagnosis. We may classify the diseases of the kidney commonly associated with blood in the urine under the following heads:—(1) Traumatic lesions—(*a*) from injury and (*b*) from calculus; (2) Passive hyperæmia—(*a*) pressure on the renal veins, (*b*) torsion of the renal veins, and (*c*) reflex spasm of arterioles; (3) Inflammatory hyperæmia—(*a*) nephritis, acute and chronic, (*b*) tuberculous disease, and (*c*) cystic degeneration and hydatids; and (4) Tumours of the kidney. In the old nosological system of Vogel hæmaturia denotes a hæmorrhage from the kidney exclusively, but the name has been applied with different latitude of meaning by different writers. According to its etymological sense it should be restricted to cases in which blood is effused from the vessels in the kidney, ureters, or bladder and discharged along with urine, excluding from the definition urethral hæmorrhage in which the blood flows by drops or in a continuous stream from the orifice of the urethra and which is not properly a mictus cruentus. Every flow of blood from the urethra ought not to be considered a hæmaturia; a hæmorrhage having its starting-point in front of the muscle of Wilson ought to be distinguished from a true hæmaturia. The pathological conditions which are associated with the appearance of blood in the urine are very various and numerous, and while the great majority of these maladies are such that they naturally come under the cognisance of the surgeon many other cases of hæmaturia do not come under our consideration as they belong strictly to medical rather than to surgical practice. For example, hæmaturia may be an accompaniment of hæmophilia, septicæmia, typhus, enteric, or malarial fevers, small-pox, scurvy, or purpura; or it may be the direct consequence of poisonous agents, such as cantharides, alcohol, turpentine, phosphorus, and arsenic. Red urine is sometimes passed by patients who have taken sulphonal in large doses or for a long period. The Burgundy-red colouration is not due, however, to blood, but to the presence of abnormal pigments, urohæmatoporphyrin or its allies.

Eliminating such sources of hæmorrhage and considering

only those of a purely surgical nature, it may be said that the presence of blood in the urine indicates disease in some portion of the urinary tract; the red corpuscles may escape from the capillaries of the kidney and become mixed with the urine as it is secreted, or the urine may escape from the collecting tubes of the kidney in the normal state and afterwards become tinged with blood from the calyces, the ureters, or the bladder. How, then, are we to form a differential diagnosis of the source of the hæmorrhage? This may be done in several ways. First, by observing *(a)* the physical characters of the urine and of the blood-clot, *(b)* the admixture of other deposits with the blood, *(c)* the time at which the blood appears in the stream, *(d)* the frequency and duration of attacks, and *(e)* the effects of movements and exercise or of complete rest in the course of an attack. Secondly, by collecting the urine separately from the two ureters or by observing blood escaping from the orifice of a ureter. Thirdly, by estimating the quantity of hæmoglobin and comparing it with the amount of albumin in the urine. Fourthly, by carefully considering all the other accompanying objective and subjective phenomena. In acute disease the diagnosis between hæmaturia of renal and vesical origin is usually easy, but it is frequently otherwise in chronic affections. In the former the objective and subjective phenomena are so pronounced as clearly to indicate the organ which is affected; in the latter the most careful observation of minute details is often necessary in order to determine the seat of the lesion, and in not a few instances examinations conducted by different observers may lead to disagreement as to whether the secreting, the conducting, or the collecting portions of the urinary system are at fault. I shall endeavour to sketch and illustrate by cases under the divisions just enumerated a systematic inquiry respecting the signs and symptoms accompanying hæmaturia in so far as they may lead us to a differential diagnosis of the source of the blood.

1. (a) Physical Examination of the Urine and the Circumstances connected with the Presence of Blood in the Evacuation.

The following questions must be inquired into and answered: What is the colour of the blood? Is it intimately mixed with the urine and is the whole stream equally colourised? Is the quantity of blood augmented by exercise or diminished by rest? Have clots been seen, and what is their form? Are there tube-casts or blood-casts to be discovered, or are there other deposits found in the urine? Are the attacks frequently repeated and of short duration, or are they protracted? These are some of the most important points to inquire into, and presently I shall discuss them in detail. The colour imparted to the urine by the addition of blood varies greatly in intensity and shade—from a pale rose colour to a bright red like red-currant syrup mixed in water, to a dark red, to a colour simulating porter, or to a brown colouration not unlike coffee. As a general rule, however, it may be stated that the nearer the source of hæmorrhage is to the external orifice of the urethra the less is the blood altered in appearance. Sometimes, however, as in cases of tumour of the kidney, the quantity of blood derived from an organ may be so large in amount and may be expelled so rapidly after it has escaped from the vessels that little change may be observed in its colour. Again, as will be illustrated presently, in some cases of rupture of the kidney from direct violence, the urine may be of a bright red colour, the blood having undergone very little change, but if there is no history or symptoms pointing to tumour of the kidney or to rupture of the organ from injury the above statement may be accepted as correct. On the other hand, when the hæmaturia is of vesical origin the first quantity of urine passed may present a normal appearance, especially if the patient has been for some time at rest in a recumbent posture and the urine is passed while the patient is in bed, but in such circumstances as the bladder empties itself the urine gradually becomes more and more tinged, till finally the last drops evacuated may be almost pure blood. This is to be especially noted in cases of tumour of the bladder and of vesical calculus, also in passive hyperæmia of the bladder. In passive hyperæmia probably the engorgement of the vesical veins is greatly augmented by the process of muscular contraction, the efflux trunks being compressed by the muscular trabeculæ through which they pass on their way to join the plexus of veins on the serous surface of the bladder. When the bladder is moderately full the veins are distended and gorged with blood, but when an expulsive effort is added to the already considerable tension the weak capillary walls give way and there may be considerable oozing of blood from the mucous surface without the appearance of any gross lesion when the bladder is examined with the cystoscope. As a general rule, in hæmorrhage from the bladder the urine is mixed with a considerable quantity of mucus and is of a bright florid colour; but if long pent up in the viscus it may assume a dark colour dependent upon the reaction of the urine, which in such cases is usually alkaline. When due to vesical calculus the hæmorrhage is increased by exertion and in cases of tumour of the bladder the bleeding is always worse after an attempt has been made to examine the bladder by instruments. When the blood is from the kidneys or the ureters it is generally intimately mixed with the urine, to which it imparts a dark smoky colour, unless when, as in Cases 7 and 12, the blood issues in considerable quantity from the pelvis of the kidney and flows rapidly along the ureter, distends the bladder, and escapes without undergoing much change. While it is true that usually blood of renal origin is freely mixed with the excretion which presents a smoky or coffee colour, too much importance must not be attached to these appearances, as they do not depend so much upon the source of the blood as upon the reaction of the urine itself—for example, in some cases of enlarged prostate and chronic vesical catarrh.

In cases where there is considerable residual urine freshly oozed blood may rapidly become smoky, and while at one time the urine may be clear and of a bright colour, while the corpuscles may separate rapidly as a deposit, on other occasions the colouring matter may be rapidly dissolved and the urine may present a distinctly smoky appearance. R. von Jaksch states that "when blood-cells are intimately mixed with the urine in such a way that though they present a large quantity of deeply tinged fluid they do *not* form a sediment after many hours' standing it may be inferred that the hæmorrhage took place in the substance of the kidney or in the renal pelvis or ureters. If under these circumstances they are seen with the microscope to be profoundly altered having lost their colouring matter and presenting the appearance of pale yellow rings, the further conclusion results that the blood has been effused from the kidney itself and the symptom points to acute nephritis or to a fresh exacerbation in the course of chronic nephritis." To this statement I cannot assent. In many cases I have seen on careful observation the urine of individual patients vary greatly from day to day, on some occasions presenting the characteristics described by Jaksch and at other times an altogether different appearance, while the hæmorrhage was proved ultimately not to be of renal origin.

Blood having escaped from the vessels its fibrous constituents may coagulate into firm clots which during their formation may entangle some of the histological elements of the structures in which they lie or by their firm appearance, form, or bulk may indicate the source of the hæmorrhage. Clots are seldom noticed in the urine unless in cases of abundant hæmorrhage; they may be few in number or numerous; generally they are soft in consistence, and when small in size they are easily dissolved in the urine and consequently, if not looked for immediately after micturition, they may be lost. The form of the clot may be ovoid, or may be long and worm-shaped, or may resemble in appearance a well-gorged leech. As to colour they are generally dark red, but may vary considerably, sometimes being black, bright red, or they may become partly or wholly discoloured—spotted red in a greyish background or entirely grey. When the clot is large, the hæmorrhage is usually, but not invariably, from the bladder; the clots may be so huge that they cannot pass along the urethra without being broken up either by the repeated contraction of the bladder or by means of instruments. These clots are generally very irregular in form and size; they may be so large as to be described by the patient as like masses of liver, but here again a conclusion must not be drawn from the size and appearance of the clot. It is generally said, and probably truly said, that these large masses of blood-clot are due to a vesical lesion, but many cases have been recorded, and some examples with be given presently, where large clots have been formed in the bladder and evacuated where the hæmorrhage has been clearly due to a renal lesion. The coagulum may make a complete cast of the pelvis or of the calyces. Three years ago, in a case of very acute parenchymatous nephritis, I had sent to me a clot of blood which was almost a complete cast

of the pelvis and a portion of the ureter of one kidney; and I remember many years ago in an exactly similar case finding at a post-mortem inspection both pelves occupied by blood-clot which extended down to, and protruded from, the orifices of the ureters into the bladder. Rounded clots corresponding to the diameter of the ureter may escape, or leech-like ovoid casts may be taken of the first part of the urethra, or long bougie-like coagula from its anterior part. While the presence of considerable clots is usually, though not always, conclusively against the idea of the hæmorrhage being from the secreting substance of the kidney the absence of clots visible to the eye proves nothing. If the passage of a long worm-shaped blood-clot is preceded by a temporary cessation of the hæmaturia and its escape followed by a recurrence of the bleeding this proves almost to demonstration that the clot has been plugging one ureter, and if in addition the clot is of such a size as to support the idea of being a mould of the ureter the evidence is conclusive as to the source of the hæmorrhage. The hæmorrhage has been from the kidney and blood has coagulated in the ureter and has completely plugged it, the coagulum has then become shrunken, while at the same time an accumulation of urine has taken place in the pelvis and caused dilatation of the ureter until a point has been reached where the onward pressure from above is so great that the clot has been forced out into the bladder along with an accumulation of blood-stained urine. I observed this lately in a case (Case 1) where palpation of the left kidney always brought on hæmaturia, but when the patient was left at rest the blood disappeared. The microscopic appearance of these clots varies according to their age and the changes they have undergone since coagulation has occurred. If the clot is freshly formed the blood corpuscles present practically a normal appearance and are seen to be well coloured and embedded in an amorphous or slightly granular matrix of fibrin; but if the clot is old, and especially if it is small in size, the hæmoglobin will be seen to have dissolved out and the red blood corpuscles to be represented only by little colourless rings from three to five micro-millimetres in diameter. These fragments of discoloured coagulated blood have sometimes been mistaken by microscopists for portions of tumours. I have had frequently sent for examination fragments of bleached blood-clot in the belief that they were portions of malignant tumours, especially sarcomata. The size of the cells, however, and the absence of nuclei, as well as the behaviour of sections when acted upon by staining agents, clear up the diagnosis. In several cases, the details of one of which will be described presently (Case 10), on examination with the cystoscope one ureter was found to be blocked by a coagulum which protruded from the orifice of the ureter and hung into the bladder, not unlike a small worm hanging from the end of a fishing hook. It was of a dark reddish grey colour and firm consistence, being evidently some days old. It was so firm that the examination of the bladder and the movements of the cystoscope disturbed it and its dislodgment was immediately followed by a copious flow of blood from the previously obstructed ureter. In renal hæmaturia minute coagula, casts of the uriniferous tubules, may be discovered in the urinary sediment by the microscope and may give evidence by their form and shape whence they are derived. In this form of hæmaturia the number of blood corpuscles is no criterion of the quantity of albumin in the urine, whereas in hæmorrhage from the conducting or collecting portions of the urinary tract, provided there is no pus in the urine, the number of red corpuscles or the amount of hæmoglobin may be accepted as the measure of the quantity of albumin contained in the excretion.

(*b*) *The Admixture of other Deposits with the Blood.*

In many cases of hæmaturia the only abnormal constituent in the urine is blood, while in other cases it is mixed with pus, mucus, tuberculous material, portions of tumours, or micro-organisms, the detection of which throws considerable light on the etiology of the malady. The mixture of the blood with deposits of another kind requires only to be mentioned here, as space will not permit me to enter into a detailed description of the various deposits which may be found. The three most common, however, I may mention—namely pus, mucus, and tuberculous debris. If the urine is placed in a conical glass and allowed to stand for a few hours, and the glass is then held up to the light, if pus is present in any great amount the deposits will be found in distinct layers like geological strata; the bottom of the glass is occupied by a yellowish deposit which may be more or less blood-stained pus, or, in some cases of renal pyuria, the pus may carry down almost all the blood corpuscles so as to leave an almost quite clear supernatant fluid. When mucus is present, on the other hand, not uncommonly the blood corpuscles may be thrown down first, forming a layer at the bottom of the vessel, and following upon this may be seen a layer of glairy gelatinous material which may have a reddish tint or may contain a multitude of minute bloody streaks which intersect it and penetrate into all parts of this gelatinous layer. In such cases the hæmorrhage is usually due to some lesion in the bladder and the presence of such an amount of mucus is generally indicative of a more or less acute vesical catarrh. The tuberculous deposit can only be distinguished by microscopic examination, by the cultivation of tuberculous bacilli, or by inoculation experiments. Beyond demonstrating the presence of blood-casts of the uriniferous tubules the microscope may reveal the existence of other elements of consequence in the deposit. For example, the character of the epithelium as derived from the renal parenchyma, from the pelvis, the ureter, or the bladder may greatly assist one in diagnosis; or, on the other hand, should the urine contain small fragments of tumours, parasites, or bacteria, the hæmorrhage may be explained.

(*c*) *The Time at which the Blood appears in the Stream.*

In order to ascertain the precise moment at which the blood appears in the stream it is necessary for the surgeon to see the patient urinate and to observe whether the colouration is equal during the whole continuance of micturition or is more abundant at the beginning or at the end of the act. The appearance of blood at the beginning of micturition, the remainder of the flow being clear, may be an indication of two distinct conditions: the lesion is either in the prostate close to the neck of the bladder or a malady or injury is present in the urethra. In some lesions of the prostate the blood may pass into the urethra and accumulate there; so also in lesions of the first portion of the urethra the blood may flow backwards into the bladder and mix with its contents. When the blood originates in the urethra and accumulates there, or when it escapes from the prostate and flows into the urethra, the hæmaturia is limited to the beginning of micturition, but if the quantity of blood is great and flows backward into the bladder and mixes with its contents then the whole of the urine becomes more or less coloured. Again, in a lesion at the neck of the bladder giving rise to hæmorrhage the hæmaturia is not limited to the beginning of micturition but blood is also observed to escape at the end of the act. This is easily explained; between the acts of urination the blood accumulates in the urethra or close to its internal orifice and is expelled with the first few drops of urine only, that following being clear, but again before complete contraction of the bladder occurs a fresh hæmorrhage is induced which shows itself in the urine last ejected. When the hæmorrhage is due to injury or disease of the urethra the nature of the lesion is generally clearly indicated by the circumstance that the blood is observed to escape quite independently of micturition; sometimes, indeed, blood is seen to flow from the meatus spontaneously. In cases of tumour of the bladder and also in vesical calculus the hæmorrhage is most profuse at the end of micturition.

(*d*) *The Frequency and Duration of the Attacks.*

While nothing absolutely definite can be ascertained by a close observation and study of the frequency and duration of the hæmaturiæ still considerable help may be got in this way to aid in a diagnosis. For example, in many cases of renal hæmaturia the blood may suddenly appear and just as suddenly disappear soon to be followed by a profuse recurrence; such sudden transformations are in some cases accompanied by the expulsion of long worm-shaped clots, and in such instances we may reasonably conclude that the sudden clearing of the urine has been due to the ureter being obstructed. The blood has coagulated within its lumen and when the clot becomes displaced a fresh and often apparently very profuse escape of blood is observed. The same sudden appearance and disappearance of blood has been observed in cases of moveable kidney with torsion of the renal veins (see Cases 11 and 12); also in cases of renal calculus (see Cases 9 and 10). When hæmaturia comes on without being evidently provoked we may generally surmise that the lesion

giving rise to it is a serious one although we may not be able to judge its site. In cases of tumour of the bladder the presence of blood is generally very persistent, without intervals, and of long duration, so that the patient may become very anæmic from loss of blood. Again, on the other hand, we meet with cases where hæmaturia more or less profuse has recurred at frequent intervals, but the duration of the attacks has been short and the intervals, between them marked by complete absence of any blood in the urine. Sometimes there may be periods of relief extending over several weeks or even months and usually any fresh recurrence of bleeding can be explained by excessive exercise or unwonted freedom of movement on the part of the patient. If these conditions are associated with the absence of vesical symptoms the strong presumption is in favour of the hæmorrhage being renal in origin and against the hypothesis that the blood is flowing from an ulcerated surface; the total duration of the symptoms is also an important guide to the benign or malignant nature of the malady giving rise to it. The long presence of a stone in the renal pelvis may, after causing occasional hæmaturia for years, be followed by the formation of a carcinoma. I published a case of this kind[1] in which there were symptoms of renal calculus for ten years, pain in and hæmaturia from the left kidney, albumin, and tube-casts from the right kidney. Within six months of death symptoms developed pointing to malignant disease, from which the patient died, and post mortem the left kidney was found to contain six oxalate of lime calculi, the pelvis and calyces were much dilated and the upper half of the kidney was occupied by an epithelioma (see Case 19).

(*e*) *The Effects of Movement or Exercise or of Complete Rest in the Course of an Attack.*

When complete rest is taken hæmaturia due to the presence of stone in the renal pelvis, in the bladder, or in the prostate is generally more or less relieved; so also in hæmorrhage observed in cases of moveable kidney, or in passive hyperæmia of the kidney resulting from pressure on the renal veins. In such cases it is repeatedly observed that the blood is most abundant in the urine at night when the patient has been taking active exercise during the preceding day, while at the same time the pain in the renal region or irritability of the bladder is increased. It must, however, be also borne in mind, in exceptional instances, that in hæmaturia from an abraded surface, as in carcinomatous or tuberculous ulceration, or in senile prostate, the bleeding occasionally may not be increased by exercise, but as a rule if the hæmaturia persists in spite of prolonged rest in bed, and especially when the bleeding is more abundant during the night than at other times, carcinomatous, sarcomatous, or tuberculous ulceration is to be looked for.

2.—By Collecting the Urine Separately from the Two Ureters or by observing Blood escaping from the Orifice of a Ureter.

Various procedures have been employed to ascertain whether the blood originates in the bladder or flows into it from one of the kidneys and methods have also been devised to ascertain the nature of a vesical lesion. Examination of the bladder by means of the sound, the catheter, or with the finger have been at different times suggested and carried out in practice. When one reads Sir Henry Thompson's[2] description of how exploration of the bladder with the finger should be carried out the marvel is that the injury done to the patient was not appalling. He introduced the *left forefinger into the rectum* as a guide to the incision of the bladder, and when the incision was completed the same finger (*the left index*) presumably without being cleaned was used in exploring the bladder. Sir Henry Thompson[3] went further than this and proposed that portions of a growth might be removed from the main mass by means of a lithotrite and submitted for microscopic examination, surely overlooking the fact that pieces of a growth removed by a crushing instrument must have lost their histological characteristics and hence been rendered valueless for diagnostic purposes. Again, Kuster has employed a curette and Chismore used a calculus aspirator for diagnostic purposes. The use of such imperfect methods is now to be condemned seeing that we have at our disposal the electric cystoscope and ureter catheters, but in order to employ these instruments the surgeon must educate himself in their use, just as in the use of any other instruments of precision. The cystoscope may be used both in men and women and when properly employed the examination subjects the patient to very little risk—less, indeed, than the use of a sound. The sound is too frequently employed in cases of hæmaturia. It is only when the bleeding is the result of a vesical calculus or an enlarged prostate or an hypertrophy of the bladder that any reliable information can be gained by the employment of the sound, and when the hæmaturia is due to other lesions much harm may be done by the rough manipulation necessary to examine the bladder with that instrument. The educated use of the cystoscope being more gentle is less dangerous and it is more valuable, but it should always be used with strictly aseptic precautions. It must be remembered that where the bladder or other portion of the urinary tract is the seat of disease the risk of septic contamination is much greater than when these parts are normal, and when septic contamination does occur the gravity of the condition is proportionately greater. In all cases not only should the cystoscope itself be thoroughly sterilised, but the meatus and surrounding parts should also be carefully washed and rendered as free from contaminating particles as possible, and after examination has been made the bladder should be carefully washed out with a fresh supply of suitable antiseptic solution. Cases undoubtedly have been recorded where, especially in tuberculosis of the kidneys and bladder, dangerous pyelitis and cystitis have followed the use of instruments, but I feel convinced that such evil consequences could not have resulted if the precautions I have just indicated had been carefully attended to. I first suggested the employment of the electric light for examination of the human bladder in 1883 by introducing an electric endoscope into the female bladder. At that time the instrument was simple and for the female served its purpose well, but since then many improvements have been made, so that now for many years the male bladder has been open to inspection by means of Leiter's instrument. By making careful examination with the cystoscope it is usually easy to ascertain whether or not the blood is from the bladder, but in a few instances it is not safe to conclude from the fact of no lesion being observed in the bladder that the hæmaturia is therefore either renal or ureteral in its origin. When, however, the blood is seen by the cystoscope flowing from the orifice of a ureter, or more rarely from both ureters, the observation is of the highest importance as indicating the source from which the blood comes. The following case illustrates this.

CASE 1. *Hæmaturia; pain in the lumbar region and physical signs of left moveable kidney; torsion of the renal vein and the ureter; ragged orifice of left ureter; blood from left kidney only.*—The patient, a woman, was sent to me by Dr. Dunsmuir of Renfrew and in a letter he gave the following history: "She came under my observation on Feb. 17th last, when she complained of frequent micturition, blood in the urine, pain in the lumbar region, and something which she could not well describe in the left renal region. About twenty years ago, while in the act of lifting some heavy wet clothes out of the boiler in the washing-house, she felt as if something had broken in her abdomen and ever after had an uncomfortable looseness which she partly remedied by sewing a pad to her stays. About eight years ago acute pain supervened in the lumbar region and up to the present has been constantly there; it varies with position, being aggravated in the erect posture and minimised slightly by inclining forward. About seven weeks ago frequent micturition came on, and a few weeks later she took to bed and on passing urine her attention was arrested by its fearfully foul smell. On examining it she observed it to be perfectly black and was for the first time alarmed about her health. Since that time the urine has never been free from blood, but varies with her movements: smoky with deposit of mucus and blood-cells after a period of absolute rest, inky black after the jolting in a cab, and claret-coloured after each bimanual examination of the left kidney. Only one clot has been detected, which was of the length and breadth of the little finger-nail and one-eighth of an inch thick with a little tail attached. The abdominal wall is very lax, allowing a fairly easy bimanual examination, which elicited a tumour partly in the left hypochondrium, partly in the epigastric and umbilical regions of a firm consistence and kidney shaped." I examined the patient and found the left kidney mobile and considerably enlarged, and on examination of the urine the

[1] The Scottish Medical and Surgical Journal, vol. i., p. 45.
[2] On Tumours of the Bladder, London, 1884, p. 17.
[3] Brit. Med. Jour., 1890, vol. ii., p. 332.

deposit presented peculiarities which were difficult to explain, a red deposit was rapidly thrown down, and on microscopic examination it presented the appearance of shreds of fibrous tissue with minute fatty globules entangled in it; along with this numerous blood corpuscles were seen. The deposit was so different from anything that I had previously seen that I submitted it to others for examination, and the consensus of opinion was that these shreds were probably the débris from a renal or vesical tumour. Examination of the bladder with the cystoscope showed it to be practically normal, the only morbid condition was the appearance of the orifice of the left ureter, which was ragged and elevated and presented very much the appearance of the crater of a volcano. While observing the appearance of the ureter blood-stained material was seen to escape from it; this examination led me to suspect the presence of a tumour in the kidney, but the history of the case as given by Dr. Dunsmuir rather favoured moveable kidney leading to torsion of the renal vessels. With the assistance of Dr. D. McK. Dewar I exposed the kidney and found it to be healthy but very free and moveable; a large portion of the adipose capsule was removed and the kidney sutured to the parietes. Since the operation there has been no hæmaturia. During one of the attacks of hæmaturia, while the patient was in the "home," the blood suddenly disappeared and recurred five hours after, apparently more profusely than before. The clearing up of the urine was coincident with increase in the pain and swelling in the renal region and the reappearance of blood gave relief to the pain and swelling and a cast of the ureter was found in the urine.

(To be continued.)

THE PATHOLOGY OF NEUROPATHIC KERATITIS.

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THE occurrence of corneal lesions in association with affections of the trigeminal nerve is well known, but much difference of opinion exists regarding the exact nature of the relationship between the two lesions. The various hypotheses suggested fall into two main groups. In the one the keratitis is regarded as a direct example of perverted trophic action of the nervous system, whereas in the other such a supposed action of the nervous system is regarded as needless and the various effects are thought to be mainly due to the anæsthesia. This insensitive condition of the cornea may act in various ways. Thus foreign bodies may lodge on the cornea and, not being felt, may remain and cause irritation and ulceration. The stimulus to the reflex action of the orbicularis (blinking) being wanting the cornea will not be properly moistened, and this condition may also in part be due to arrest of activity of the lacrymal gland. Again, owing to the sensory paralysis slight injuries (with perhaps microbic invasion from the lacrymal sac or conjunctiva) may give rise to excessive vaso-motor reaction and in this way become more extensive and the reparative processes fail to take place.

During the last year several cases of "neuropathic keratitis" have been under my care at University College Hospital, and as each has some points of special interest I propose to briefly record them and at the same time to review previously recorded clinical cases and post-mortem examinations and also the experimental investigations, with the object of ascertaining how far such evidence favours one or other of the previously mentioned hypotheses.

Now, in the first place, constant exposure of the eye with consequent liability to injury and dryness does not at all necessarily lead to keratitis. Everyone is familiar with cases of old-standing Bell's paralysis in which the cornea has been exposed for years without any damage resulting. And it is quite exceptional to meet with a case of Graves's disease with an inflammation of the exposed cornea. Again, I have notes of a case of a patient who had a severe burn when a child, involving the forehead and eyelid, which prevented effectual closure of the lids, and yet after ten years there had not been the slightest sign of ulceration. Frequently associated with the fifth nerve lesion is a paralysis of other cranial nerves (oculo-motor, &c.), and the presence of ptosis, with consequent protection, does not prevent—though it may modify—the occurrence of typical neuropathic keratitis. And in one of my cases (Case 4) the keratitis developed subsequently to the involvement of the third nerve. Mendel and Hirschberg record a case in a child in which "neuroparalytic keratitis" existed in each eye, associated on the one side with facial paralysis and a sensitive cornea, and on the other with trigeminal paralysis giving rise to an anæsthetic cornea, but with no facial paralysis, and therefore no undue exposure.

In another group of cases the cornea may be completely anæsthetic for a long time and yet no keratitis be set up. The following is a case in point.

CASE 1.—A man, aged fifty years, came to the hospital with acute facial herpes, the patches being situated at the left angle of the mouth, the left lower eyelid and adjacent side of nose, and a fourth large patch on the right ala of the nose and lower lid of same side. Both corneæ were insensitive and no corneal reflex could be obtained, but both were quite sound. It was impossible to bandage both eyes, and as the herpes quickly subsided the man soon returned to work; and although the cornea remained insensitive for several weeks no ulceration or inflammation occurred.

Harlan[1] records a case where the insensitive cornea remained sound "for years" and Gowers mentions a similar one which had been under his observation seven years. And in another of my cases to be given in detail later, the cornea was anæsthetic for some time without being inflamed. W. J. Collins[2] has recorded a case where an anæsthetic cornea became cloudy "after eight months' anæsthesia with perfect pellucidity." Further, complete removal of the Gasserian ganglion in man, with consequent anæsthesia of cornea, is not necessarily followed by keratitis.

In a third group of cases, typical neuropathic keratitis exists with a normally sensitive cornea. Mendel and Hirschberg's case (previously quoted) is a case in point. Genkin reports another in which "trophic keratitis" existed with a normally sensitive cornea. Herpetic eruptions are generally regarded as trophic lesions. Two varieties of herpes of the cornea are met with—the one complicating acute febrile herpes and characterised by small vesicles on the cornea with much irritation which quickly subsides when the vesicles burst; the other occurring with herpes zoster ophthalmicus, differing from the former by the tendency to persistence of the irritation and to implication of the deeper layers of the cornea. The following case is an example of the former variety.

CASE 2.—A woman, aged thirty years, came to the hospital on Sept. 15th with much photophobia. On both upper and lower lids of the right eye were some drying up herpetic vesicles. The lids were separated with great difficulty and then a small superficial ulcer of the cornea was observed. Three weeks later the photophobia was still marked and the ulceration had spread. Ultimately the irritation subsided and the ulcers healed. In this case there was clearly no anæsthesia of the cornea.

In considering this group of cases it must be noted that Mr. Tweedy has for long taught and described that corneal ulcers, having the same clinical characters as those which occur in connexion with grave lesions of the fifth nerve, are frequently found with a normally sensitive cornea; and he thinks that their essential neuropathic nature is shown by the ready way they respond to efficient protective treatment, by the slight vascular reaction accompanying them, and by the frequency of a history of preceding neuralgia.

Lastly, in reference to the hypothesis that an insensitive cornea is less resistant to traumatism, it must be noted that operations on insensitive corneæ—insensitive, that is, from paralysis of the fifth nerve—may do quite well; and Panas[3] records an example of this where the operation was necessitated by a preceding attack of "neuroparalytic keratitis."

It seems fair to conclude from the consideration of these and similar cases that mere anæsthesia of cornea with consequent dryness and impaired vaso-motor reaction cannot be regarded as the essential factor in the production of the keratitis, though there can be no doubt that anæsthesia and also want of protection do modify the course of the

[1] Harlan: American Journal of the Medical Sciences, vol. cxxxiv.
[2] Collins: Transactions of the Ophthalmological Society of the United Kingdom, vol. viii. and vol. ix.
[3] Panas: Maladie des Yeux, vol. i., p. 257.

inflammation. And this conclusion is further strengthened by the fact (to be more fully emphasised later) that the keratitis is frequently preceded by iritis.

The evidence respecting the remaining hypothesis—namely, that the keratitis is the direct outcome of some perverted trophic nervous action—must be next considered. And in the first place there is a good deal of evidence of the existence of such trophic action of the nervous system in parts of the body other than the eye. The acute bedsores in some spinal cases, the perforating ulcer and joint affections in tabes dorsalis, the atrophy of the phalanges and joint lesions in syringomyelia, and the atrophy of skin and bone which may follow injuries of nerves are all cases in point. The last group of cases mentioned has an important bearing on the subject immediately under consideration, for Gowers states that atrophy of skin and bone in the finger-ends after a lesion of the nerve of the arm may proceed in spite of the existence and persistence of normal sensibility. So that the retention of normal sensation in a part does not in the least militate against the view that perverted trophic action is going on at the same time. Further, there is a good deal of evidence that the changes occurring in the condition known as facial hemiatrophy depend on lesions of the fifth nerve, and interstitial neuritis of this nerve has been found post mortem. And it is important to note that not only has typical neuropathic keratitis been observed in these cases but also patches of choroiditis with vitreous and lenticular opacities, these latter being probably secondary to changes in the uvea.[4] And, lastly, in association with severe cases of trigeminal neuralgia, trophic lesions such as a falling off of the hair and eyebrows or a whitening of them have been observed.[5]

Thus though it may be impossible to prove clinically that neuropathic keratitis is due to a trophic lesion yet such an explanation seems most probable. The further question then arises—viz., whether such trophic action is to be viewed as one of paralysis or as one of irritation. The clinical evidence points most strongly to the process being one of irritation. In the first place, cases of herpes are associated with neuralgic pain; in the next, a history of preceding neuralgia is very commonly to be obtained in cases of trophic keratitis, even though the cornea be anæsthetic at the time when the keratitis supervenes; thirdly, aseptic removal of the Gasserian ganglion, with healing by first intention, is not necessarily followed by keratitis even though the eye be not protected; and finally (and perhaps most important) cases are frequently met with in which a condition of iritis may precede the keratitis. As bearing on these points I will relate the following cases.

CASE 3.—A man, aged forty-one years, came to the hospital on Aug. 14th, 1897. The following notes were then made: "There is complete loss of sensation in the region supplied by the left fifth nerve; there is a shallow, non-vascular ulcer involving the entire extent of the left cornea with the exception of a narrow, clear zone at the outer margin, very slight ciliary injection, no facial paralysis." The patient gave a history of having previously had violent attacks of neuralgia in the left side of the head and eye. The edges of the lids were pared and sutured and the ulcer slowly healed, the cornea becoming much clearer. Later right facial paralysis with intense right-sided neuralgia supervened. Dr. Bastian, who saw the case, regarded it as one of syphilitic meningitis.

CASE 4.—The patient was admitted to University College Hospital under Dr. Bastian in November, 1897, suffering from the effects of an intracranial growth. He stated that the left upper eyelid had "dropped" in the previous September and had remained in that condition ever since. Examination of the left eye showed that there was complete ptosis, the eyeball was quite immobile, the cornea was clear with well-marked circumcorneal injection and deep anterior chamber, the iris was dull, the pupil was of medium size, reacting sluggishly to light; tension was full; and the cornea and conjunctiva were quite anæsthetic. On the right side there was paralysis of the external rectus but no affection of the cornea or iris or fifth nerve. There was optic neuritis in each eye. In addition to the paralysis of the left third, fourth, fifth, and sixth nerves there was paralysis of the left hypoglossal and difficulty in swallowing and in articulation. Eight days after admission a small central funnel-shaped ulcer was noted in the left cornea and there was some increase in the iritis; the eye was now kept effectually bandaged and the ulcer healed in the course of three or four weeks. The patient left the hospital a few days before he died and no post-mortem examination was obtained. The points of special interest in this case are: (1) the supervention of the keratitis in spite of the protection afforded by the presence of ptosis, though doubtless the latter modified and limited the extent of the ulceration; (2) the occurrence of a deep-seated inflammation—iritis—before the corneal trouble; and (3) the presence of irritative lesions (iritis and optic neuritis) at the same time that the cornea was insensitive, indicating that the trophic action is of the nature of irritation and yet may co-exist with paralysis of the ordinary afferent nerves.

CASE 5.—This patient, a woman, was in University College Hospital under the care of Dr. Bastian. On the right side the third, fourth, and sixth nerves were paralysed and there was anæsthesia over the right forehead down to the level of the palpebral fissure. The ptosis was not complete, about the upper half of the cornea being covered. In the lower half of the cornea was a superficial ulcer and above this a nebula, the horizontal upper edge of which corresponded to the edge of the drooped upper lid. There was and had been much neuralgic pain in the region of the fifth nerve. The eye was bandaged and improved a little, but there were repeated attacks of keratitis, always accompanied by severe fifth-nerve pain. The lids were, later, pared and sutured, with the result that the ulcer healed and no recurrences have taken place in the ulceration although the pain has continued. In this case the ptosis certainly modified the extent of the ulcer, but it is important to note that mere bandaging did not arrest the ulceration and also that irritation of the fifth nerve may exist with partial anæsthesia of it.

Ferrier[6] has published a somewhat similar case in which neuropathic keratitis was associated with "anæsthesia dolorosa" in the territory of the fifth nerve and he regarded the keratitis as due to irritation of the nerve. Hutchinson, too, states that the cases of herpes in which the cornea is affected are those most prone to suffer subsequently from neuralgia, and this post-herpetic neuralgia may persist for months after the vesicles have disappeared and may co-exist with complete anæsthesia of the cornea. Hence the presence of an anæsthetic cornea in any one case of keratitis does not render the assumption of irritative processes of a trophic nature going on at the same time at all unjustifiable. Chibret[7] has described cases of iritis and keratitis in which there were "tender points" over the spots of emergence of the branches of the fifth nerve—an observation familiar to most—but he especially described these cases because he found that massage applied to these nerves was quickly followed by marked improvement. I have not found, however, any confirmation of this last statement.

It has been suggested that the phenomena are due to vascular dilatation the result of stimulation of a sensory nerve; but that this is inadequate is shown by the occurrence of neuropathic keratitis with such variable condition of the sensibility of the cornea and also, that though preceding neuralgia is common, yet at the time of supervention of the keratitis anæsthesia is often present.

A review, then, of the clinical study of these cases of keratitis leads to the conclusion that the most likely explanation of them is that they are caused by perverted trophic action, such perversion being of the nature of irritation, the various other explanations suggested being inadequate to explain all cases.

Much experimental work has been done to elucidate the nature of the action of the fifth nerve on the nutrition of the cornea. Majendie (1822) first drew attention to the effect of section of the fifth nerve on the cornea and was followed by Bernard (1863), who showed that the effect was the more marked if the animals were young or diseased at the time. Meissner (1867) showed more or less accidentally that it was possible to divide one portion of the nerve—the inner—with the result of inducing keratitis without anæsthesia and conversely. Snellen (1857) and others tried to show that the results so obtained were merely due to slight injuries—desiccation, &c., of the cornea the direct result of the anæsthesia—and,

[4] Kalt: Société de Biologie, 1889, Février 23. Strümpell: Nervenkrankheiten, p. 29.

[6] Ferrier: THE LANCET, Jan. 17th, 1888.

[7] Chibret: Comptes Rendus de l'Académie des Sciences, July 15th, 1889

in order to explain how such slight injuries produced such severe corneal inflammation, assumed that the cornea after section of the nerve had a diminished power of resistance, an assumption which almost implies a nutritional change. Later Feuer[8] and Hippel[9] proved that an insensitive cornea does react in a normal way to injuries and thought that the essential factor in the causation of the keratitis was a too dry condition of the cornea. Samuel, Meissner, and especially Duval and Laborde,[10] have drawn attention to the occurrence of iritis and hypopyon *before* the corneal lesions after section of the fifth. The latter observers—confirming an earlier suggestion of Meissner—think that they have demonstrated a bulbar nucleus concerned with these trophic functions of the fifth nerve. Laborde,[11] too, has described choroidal changes developing after section of the fifth nerve exactly analogous to the changes described in some cases of facial hemiatrophy. Gaule[12] describes necrotic changes in the corneal corpuscles with epithelial proliferation after division of the ophthalmic nerve, and assumes that these corpuscles are the "end organs" of the sensory nerves and degenerate in consequence of the atrophy of the nerve. On the whole the experimental work supports the hypothesis of the existence of trophic fibres in the fifth nerve (as distinct from the fibres of ordinary sensation), and bearing in mind that many of those experiments, including Meissner's, were performed in the pre-antiseptic days and contrasting them with the favourable results which follow aseptic removal of the Gasserian ganglion in man they may be taken as indicating that the essential lesion of the trophic fibres is of the nature of irritation. Some few experiments have been done with the object of ascertaining if continuous irritation of a nerve is followed by changes in the tissue, and abscesses and ulcers have been described as resulting from such irritation. But I believe these experiments are generally discredited and in any case need confirmation. In whatever way Gaule's results are to be explained his experiments are of importance as showing that a direct relation does exist between the integrity of the fifth nerve and the essential structure of the cornea.

The lesions of the fifth nerve found associated with trophic keratitis are very various, and from the point of view of the lesion being of the nature of irritation it is important to note that the nerve is as a rule only partially damaged. In one of the earliest cases the Gasserian ganglion is described as yellowish-grey; in another recorded in 1833 it is said to be enlarged and lardaceous. Alison (1836) recorded a case in which the nerve was indurated both in front and behind the ganglion. Haase (1882) found softening in the anterior part of the pons with hæmorrhage into the ganglion. Mendel's case, previously referred to, was found to be due to softening of the upper part of the pons. In a case recorded by Bernhardt there was "superficial destruction of the pons" and changes in the corpora quadrigemina. Genkin[13] found in one case a gummatous tumour of the sphenoid compressing the fifth nerve. Schweinitz in a case of trophic keratitis dissected the ciliary nerves and found them to be normal. On the other hand, in a case of herpes the ophthalmic nerve was found by Wyss[14] to be inflamed, the Gasserian ganglion was surrounded by blood and infiltrated with pus cells, but the nerve on the proximal side of the ganglion was healthy. The changes in the nerve were regarded as indicative of true neuritis. Hæmorrhage and degenerative change in the Gasserian ganglion have been found in other cases of ophthalmic herpes. Baudry[15] relates two cases: in one the nerve was damaged by a fracture of the petrous bone and in the other the corneal changes were consecutive to a neuralgia of the fifth nerve induced by cold. In a case under the care of Mr. Tweedy the nerve and ganglion were found post mortem involved in a large sarcomatous growth.

From the above considerations it seems fair to conclude that the nutrition of the eyeball is directly dependent on the integrity and condition of certain nerve-fibres contained in the Gasserian ganglion and ophthalmic nerve, and that irritation of these fibres leads to those changes in nutrition of the cornea which are recognised as neuropathic keratitis. As to the exact *modus operandi* of such irritation little can be said. The best known effect of nervous stimuli on the structure of organs is that produced by stimulating the secreting nerve of glands. Now, the nutrition of the eyeball is dependent largely on the fluids derived from the ciliary body and within the last few years structures resembling glands have been described in the ciliary processes and those glands have been found enlarged and showing increase in their epithelium in cases of "serous iritis," a condition characterised by increase of aqueous humour and alteration in its composition, as evidenced by the presence of keratitis punctata. It seems possible that the trophic nerves of the eyeball may be the nerves which supply these glands and that abnormal stimulation of them may lead both to an increase in the fluid secreted and an alteration in its composition. In support of this suggestion I would recall the fact previously cited, that frequently in experimental investigations hypopyon precedes the occurrence of keratitis, and a similar sequence may be observed clinically; and also that stimulation of the fifth nerve, as in some cases of trigeminal neuralgia, leads to increase of tension and a deepening of the anterior chamber. Further, the facts alluded to in discussing facial hemiatrophy tend in the same direction. But at the same time it must be allowed that the connexion between the nerves and the integrity of the cornea may be more direct and intimate than this, and although such connexion has not been definitely proved, yet the occurrence of discrete herpetic vesicles on the cornea and the degeneration of the corpuscles after section of the nerve make such a supposition quite possible.

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[8] Feuer: Sitzungsberichte der Kaiserlichen Academie zu Wien, 1876, 3.
[9] Hippel: Archiv für Ophthalmologie, Band xxxv., 3, p. 217, 1889.
[10] Duval and Laborde: Travaux de Laboratoire de Physiologie de la Faculté de Médecine de Paris, 1885.
[11] Laborde: Société de Biologie, 1889, Février 16.
[12] Gaule: Centralblatt für Physiologie, 1891, 15.
[13] Genkin: Archives d'Ophthalmologie, 1896, p. 757.
[14] Wyss: Archiv der Heilkunde, Band xii., p. 294.
[15] Baudry: Archives d'Ophthalmologie, 1886, tome vi., p. 70.

ON THE HEART-RADIAL INTERVAL AND A HITHERTO UNKNOWN METHOD OF COMPENSATION IN AORTIC REGURGITATION.

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IN the Goulstonian lectures, published in THE LANCET in March, 1894, I criticised at some little length the possibility of the abolition of the "præsphygmic interval" in cases of pure and uncomplicated aortic regurgitation, and I made the following statement, which I believed to be thoroughly justified on physiological grounds, and to be in accordance with my own experimental observations: "In his preliminary chapter on the 'Variations of the Præsphygmic Interval in Disease' Keyt gives as his first proposition that 'the præsphygmic interval is abnormally shortened in free aortic insufficiency,' and I think that this proposition, confirmed as it is from independent sources, is one that should be admitted. He with a positiveness which almost calls up antagonism, says 'the testimony is ample and complete and establishes the fact beyond question.'" This statement I have now to traverse, and, indeed, I am about to show, and by the graphic method which he considered to be incontrovertible, that the heart-radial interval may be excessively increased in pure aortic regurgitation.

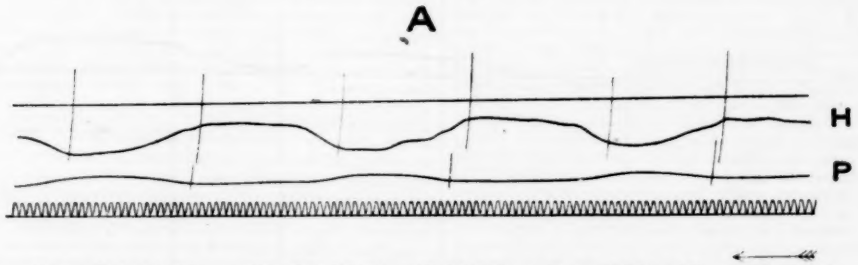
In a normal heart no blood can flow from the ventricle into the aorta until the pressure within the ventricle has risen above the aortic blood-pressure; until this time the aortic valves must undoubtedly remain closed. The time during which the intraventricular pressure rises during systole is called the "Anspannungzeit" or (by Keyt) the "Præsphygmic Interval." Keyt says (p. 165): "When the aortic valves are permanently open the pressures in the ventricle and aorta are always in equilibrium at the beginning of systole (the two cavities being in one), whether the mean pressure be low or high. In consequence of this oneness or equilibrium of pressure the heart's impulse and aortic pulse will be synchronous." With regard to this, I always thought that the often confused ideas of blood-flow and of pulse-wave, two wholly different things, were not sufficiently differentiated in Keyt's mind. Even an impact against a *closed* valve may conceivably send on a *wave*, though no fluid pass through the valve. Whether this is so or not in an acting heart I am not prepared to show. It is not likely, and it is not to

my present purpose. Keyt's statement that the "præsphygmic interval" is abnormally shortened in free aortic insufficiency—is, indeed, *always* shortened in pure aortic insufficiency—is based on his graphic method, which he thinks conclusively proves that in every case of aortic insufficiency there is diminution or abolition of the *heart-radial* interval. The theory of abolition of præsphygmic interval he calls to his aid in explanation of his facts, and henceforth "the testimony is ample and complete and establishes the fact beyond question." To him experiment and argument certainly went hand-in-hand.

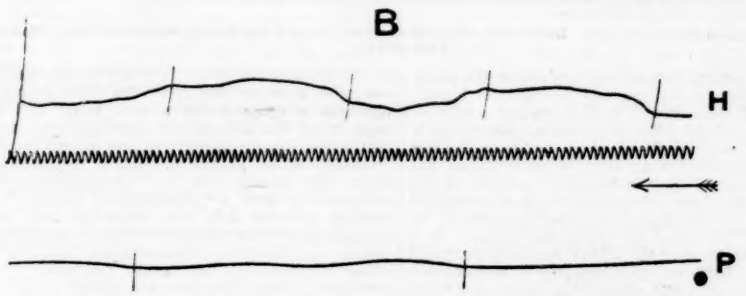
His facts were, however, clinically speaking, new. Before the graphic method various clinicians thought otherwise. Dr. Henderson in 1832 stated that the interval between the heart's impulse and the arterial pulse was prolonged in aortic insufficiency. Flint says that the fact of prolonged delay "is not to be denied" (1859). Walshe says: "The retardation may with care be detected in many, but unquestionably not in all, cases of that disease." Many principal authorities have held the same view. The latest and not the least careful observer, whose deliberate clinical statements are not to be lightly denied, Sir William Broadbent, says[1]: "The pulse in aortic regurgitation is always retarded or delayed—that is, there is an appreciable interval between the beat of the heart or the carotid pulse and the pulsations in the radial artery which varies according to the extent of the incompetence. This delay is due partly to the collapsed and empty state of the arteries between the beats and partly to their large size and loss of tone. There is no longer a continuous column of blood between the heart and the periphery, and the tension in the arterial system has to be considerably augmented by the launching of a large volume of blood into the aorta before the vessels are rendered sufficiently tense for a pulse wave to be transmitted."

Yet Keyt and purely theoretical physiology are not alone in stating that the heart radial interval is diminished. François Franck made observations on patients affected with aortic insufficiency and first presented his results to the Société de Biologie in March, 1878. He states as the conclusion of his researches: "In large, pure aortic insufficiency the retardation of the pulse on the beginning of the systole of the heart is very notably diminished." I cannot hope to completely and for ever decide this question, but I can at least give some evidence in favour of the great clinicians, though differing from Sir Wm. Broadbent as to the explanation of pulse delay in these cases.

In the first place, though I greatly admire Keyt, I must enter some protest against a paragraph of his which I am sorry he ever wrote. He says (p. 165): "It is easy to explain the fallacy of an exaggerated delay of the pulse on the systole of the ventricle in aortic insufficiency; the enlarged ventricle suddenly filling from both the aorta by reverse and the auricle by direct flow communicates a shock so marked as to be mistaken for systole. This impulse occurring in the first part of diastole and preceding the arterial pulse at such distance gives the impression of enormous delay of the pulse. ..... The fallacy arose from an error of observation which the graphic method was needed to correct." This is to attribute an almost laughable incompetence to the great names I have cited and calls for no comment. I did, however, as the result of some of my own observations, think Keyt was safe in the position he was trying to defend. One such case I published in the lectures aforesaid and I thought his proposition should be admitted. I have now to publish a case of pure and uncomplicated aortic regurgitation which demonstrably in a particular instance proves the reverse, and which therefore completely upsets his doctrine.



Tracing obtained in February, 1898. Systole 0·40 sec. Diastole 0·36 sec. Heart radial delay 0·53 sec. Pulse rate 80. H, Heart. P, Pulse. Reed chronograph vibrating 64 per second.



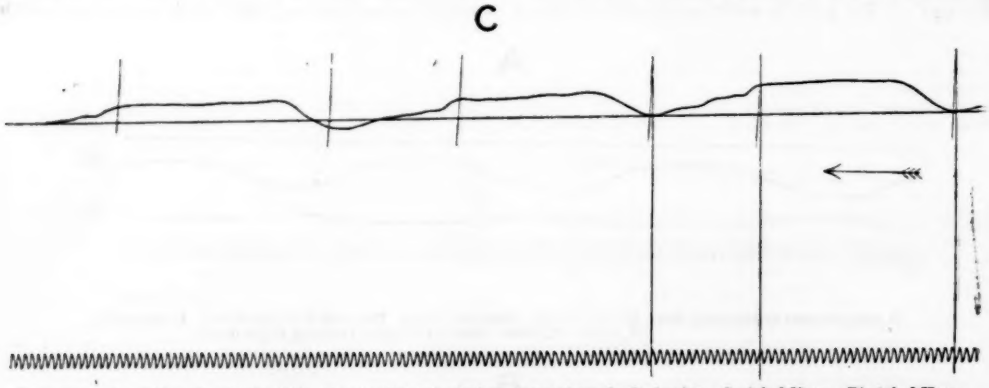
A second tracing in the same case as A, but at increased speed.

The patient was granted six months' leave from his employment owing to a breakdown in health and was placed under my care in January last. He was then in an imminently precarious state, with much cardiac distress, and was subject to some curious cerebral sensations which he could scarcely describe. The heart was dilated and presented a loud and solely regurgitant aortic murmur, accompanied by a characteristic pulse. Being of a rather plethoric habit he was put upon careful dietetic treatment with the object of reducing his plethora and the heart condition was treated with strychnine and strophanthus. Living at a distance he was seen only at intervals of a fortnight, but early in February the accompanying tracing (A) was obtained by the transmission apparatus which is fully described in my Goulstonian lectures, some considerable improvement in his symptoms having already taken place. The chronographic simultaneous tracing was taken from a harmonium reed vibrating 64 times in a second, the accuracy of which had been recently tested. The first obvious result of the tracing is to show a very

[1] Heart Disease, 1897, p. 142.

marked heart-radial delay—a delay of 0·53 second—whereas the normal heart-radial delay is about from 0·17 second to 0·2 second. Another striking result is the encroachment of systolic on diastolic time, the systole being of 0·40 second duration and the diastole varying from 0·36 second to 0·39 second. Although the cardiograph was in excellent working order the upstroke at the beginning of systole is seen to be a slow upheaval manifesting itself in an oblique line. The simultaneous pulse tracing was obtained with difficulty; unlike a normal tracing it is comparatively unformed, though the commencement is sharply defined and easily measurable. On March 11th a second tracing (C) was obtained. The patient was subjectively in a much better state of health, though still complaining of strange sensations at the top of the head. The initial slow upheaval in the cardiac tracing is still more clearly seen. The heart-radial delay was 0·4 second. The pulse-rate was 70. The duration of systole—which for that pulse-rate should be from 0·32 second to 0·33 second—was 0·50 second, the diastolic rest being 0·33 second.

With regard to the increased heart-radial delay I think the following explanation seems to be the correct one. That in a sound and normally acting heart there is a definite "Anspannungzeit" or "præsphygmic interval" is not to be questioned. It is based on absolute experiment and does not admit of doubt. The rise of pressure at the beginning of systole is, however, quick owing to the initial low blood-pressure within the ventricle, and the contraction is therefore a sudden thing. In pure aortic regurgitation, however, it is not to be doubted that the intraventricular blood-pressure is already great at the commencement of systole. To lift a 5 lb. weight in the hand upwards in order to strike a drum may be a matter of a moment and the resulting impact may be sudden and great; to raise a weight of 50 lb. the same distance would take longer, while the impact against the drum need not be greater than in the first instance. In pure aortic regurgitation it is perhaps not too much to assume an analogy with the act of lifting the larger weight. The contraction is therefore comparatively a very slow contraction and that this is so can be plainly seen in the cardiac tracing. The first condition



Same case as A and B on March 11th, 1898. Heart radial delay 0·40 sec. is not shown in the tracing. Systole 0·50 sec. Diastole 0·33 sec. Pulse rate 70.

I have elsewhere shown that normally, whatever the pulse-rate may be, the diastolic rest exceeds the systolic labour. At a pulse-rate of 70 there should be 15 hours and 5 minutes of rest to 8 hours and 55 minutes of work. Here there is about 14¾ hours of work to 9¼ of rest. As far as I know this kind of compensation for any form of heart disease has not even been surmised. Encroachment of systolic on the diastolic time has not been brought about by physiological experiments either by increasing the blood-pressure or by varying the rate of heart beat or by any like means. In a paper in the Transactions of the Royal Medico-Chirurgical Society, vol. lxix., 1886, on Cardiography I endeavoured to show that while digitalis slowed the heart and regulated an irregular heart, yet it did not lengthen the relative duration of systole, while, on the other hand, convallaria appeared to have the property of really somewhat lengthening systole—that is to say, lengthening it at the expense of diastole. However immediately beneficial this form of compensation may be, by means of maintaining the pressure in the arterial system and thereby avoiding the sudden and futile dilatation arising from the rapid ingestion of a large volume of blood into comparatively empty vessels (the pressure in the arteries varying from perhaps 60 mm. Hg. at the end of diastole to 200 mm. Hg. during systole), yet it cannot be doubted that eventual exhaustion must take place at an early age and the heart's mechanism be worn out by excessive work long before the natural and normal term of life. Should there be truth in the suggestion that convallaria lengthens the relative duration of systole it might be advisable to administer it in cases where this kind of compensation is lacking, in preference to giving digitalis, which does not lengthen the relative duration of systole but slows the heart by increasing diastole, at the same time supporting the ventricle, increasing its force and regulating its action, as well as regulating its action in regard to diastole. A possibly superior merit of strophanthus may lie in its not contracting the arterioles as does digitalis, with the consequence of permitting freer outflow of blood through the arterioles.

of the heart-radial delay is therefore produced. Secondly, the pulse wave arising from the slow contraction of the ventricle is consequently a slow wave, and can only be rapid when the arteries are comparatively empty and the ventricular pressure slight at the commencement of contraction. While, therefore, clearly recognising in normal hearts the presence of an "Anspannungzeit," or what is termed by Keyt a "præsphygmic interval," and acknowledging to the full the necessity and value of its recognition, it does not follow that its abolition necessarily entails a shortened heart-radial interval. It might either be desirable to retain the term "Anspannungzeit" or to create some more convenient term. The preparation to action by rendering the harness tense may in pure aortic regurgitation not be possible—the poor horse (in this instance the heart) being already under a steady stress from the outset. The term "præsphygmic interval," which owing to the meaning given to it by its creator unfortunately presumes a special theory, should certainly be thrown aside in favour of some other term which will not implicitly commit us to theories as to what will happen in its absence.

I would suggest the use of the term "isodynamic interval" to express this period of time *which in aortic regurgitation may be abolished without lessening the heart-radial interval.* Or to those who prefer it the term "prokinetic interval" may perhaps commend itself. The first term suggests the time of activity occupied in attaining balance of blood-pressure, the second the time of activity antecedent to the onward movement of blood. Of the two terms the first appears to me to be the least compromising. Its employment in electromagnetics is too far afield to lead to confusion, and used here it would be a containing term where the desired sense did not overflow the margin. Moreover, I think it better to be able to say in the instance I have been discussing not that an "Anspannungzeit" or "prokinetic interval" did not exist, but that an isodynamic condition prevailed from the beginning of contraction.

Hereford.

THE DIAGNOSTIC USES OF PERCUSSION OF THE VERTEBRAL SPINES, WITH GENERAL REMARKS ON "PLEXIMETRIC" BONES AND VISCERA.[1]

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PRACTICAL importance attaches to percussion of the spinous processes, though I have never seen it carried out. It is both easy to perform and very definite in its results. Normally the spine is always resonant from the occiput to the coccyx. The slight variations in the degree of this resonance which belong to different levels are matters for finer percussion. The occurrence of any considerable dulness anywhere in the length of the spine is therefore in itself highly suggestive. The normal vertebral resonance is a borrowed resonance, living bones being naturally dull. Its pleximetric character may be easily demonstrated in various ways, as, for instance, by the fact that a considerable pleuritic effusion does not render the spines dull, the conducted resonance from the sound side, and perhaps from the compressed lung, prevailing over the dulling influence due to the fluid. Localised spinal dulness thus indicates local causes isolating the vertebræ at least partially from their usual plentiful supply of resonance, and we cannot expect slight causes to bring it about. All the greater, therefore, is the significance attaching to any marked dulness. This pleximetric conduction of distant local dulnesses is of value since it conveys to us information from an otherwise inaccessible depth (measured by the long axis of the vertebra) as to mediastinal conditions which may be of the first importance. Thus, at different levels in the chest it may afford evidence of upper thoracic glandular enlargements, or of aneurysm of the arch, or of œsophageal disease, or of infra-tracheal glandular swelling, or, lastly, of pericardial effusion, the "lower dorsal dull patch," which is an invariable accompaniment of the latter, always including dulness of the eleventh and twelfth spines.[2] Lower down abdominal and pelvic disease may in the same way be indicated by local dulness as may be described in a future communication. For surgical diagnosis this method is likely to be of advantage. Mere infiltration of the vertebræ with cancer or tubercle would probably not modify their conveyed resonance; but spinal abscess, extensive outgrowths, tumours, &c., might dull the percussion note. My observations on these points are not yet completed, but I have already found this method of considerable use in the diagnosis of œsophageal disease and of mediastinal glandular enlargements in the interscapular region. The same conducting power for vibrations belongs more or less to all the thoracic bones. Three of them, however, are more specially "pleximetric" bones—the clavicle, the sternum, and the scapula, and concerning them there is much to be said. Further remarks on this subject and on that of the pleximetric resonance of viscera will be found elsewhere.[3] I would merely draw attention here to the scapula, which plays the part of a huge pleximeter. This is a leading fact not sufficiently recognised in dorsal percussion. In spite of the great thickness of its muscles the scapula is often the most resonant part of the back, as a comparative percussion outside its borders and within them will show. This resonance which tends to be uniform over the scapula as a whole is derived from the underlying resonant thoracic surface, and it is also propagated along its spine to the shoulder. It thus happens that the acromion, although far removed from the lung, is resonant.

Pleximetric viscera.—The simplest example of a pleximetric visceral resonance is that sometimes afforded by the spleen. Under the influence of gaseous distension of the stomach and of the colon the spleen may become not only resonant but tympanitic, and the "boxy" note which it yields will then enable us to determine its size with as much accuracy as when the customary dull note is our guide. This is of practical importance to the physician, who will sometimes have to decide whether the abnormal resonance at the axillary base is an extension of Traube's area and due to a stomach distended upwards, or whether it is due merely to a pleximetric resonance of the spleen.

The ordinary resonance conveyed to the left lobe of the liver from an inflated stomach is too well known to need comment. Gastric inflation may also impart a tympanitic resonance to the lower part of the præcordium. When these abnormal resonances attain an unusual degree collateral evidence and additional physical signs will generally help us to determine whether they may be due to an intra-peritoneal gaseous accumulation.

Of special interest to the surgeon is the pleximetric resonance sometimes assumed by the right lobe of the liver, simulating the presence of gas in front of that lobe. The most striking case of this sort was one in which opinions were divided as to the origin of the supposed gaseous extravasation. Mr. H. W. Allingham, who operated, failed to discover any lesion in the ileo-cæcal region and made a second incision in search of the gastric lesion which I had suspected. There was no free gas in the peritoneum and the most exhaustive exploration did not succeed in tracing any disease. The symptoms not having been relieved the patient died. The cause of the tympanitic resonance of the hepatic region was revealed at the necropsy. A limited gaseous abscess, due to a gastric ulcer, was closely bound down between the liver and the diaphragm. It was situated so far back that until the liver itself was removed it had escaped detection at the preliminary examination of the parts *in situ*. This was a clear instance of complete pleximetric resonance of the liver due to an underlying collection of gas confined under pressure. The case is instructive as an illustration of the difficulty of diagnosing this conveyed tympanitic resonance from that which arises from a gaseous accumulation between the liver and the parietes.

Curzon-street, W.

[1] Cf. Lectures to Advanced Clinical Students on Practical Points in Percussion and Auscultation, &c., Clinical Journal, July 12th, 1898.

[2] Cf. Practical Aids in the Diagnosis of Pericardial Effusion in connexion with the Question as to Surgical Treatment, Brit. Med. Jour., March 24th, 1896. Also, Remarks on the Dorsal Test for Pericardial Effusion: an Addendum, Brit. Med. Jour., Jan. 23rd, 1897. Also, On Latent and Transient Pericardial Effusion, THE LANCET, Nov. 21st, 1896. Also, On Latent and Ephemeral Pericardial Effusions, Transactions of the Clinical Society, Feb. 11th, 1898.

[3] Cf. Clinical Journal, loc. cit.

COBRA POISON IN RELATION TO WASSERMANN'S NEW THEORY OF IMMUNITY.

BY WALTER MYERS, M.A., M.B., B.SC. CANTAB.
(From the Pathological Laboratory, Cambridge.)

IN a paper read before the Pathological Society of London in April last I gave a short account of some experiments on the antidotal properties of normal tissue emulsions in regard to cobra poison. I was led to undertake the experiments by a consideration of Wassermann's work which was based upon a theory of Ehrlich,[1] according to which every "antitoxin-producing" toxin is specific in the sense that it produces its symptoms by chemical combination of its toxophoric atoms with some cell substance in the body of the susceptible animal. If this is the case then, as Wassermann argued, it is clear that on mixing the toxin and the specific cell substance *in vitro* the toxin should be neutralised; and, indeed, a suitable mixture of tetanus toxin and emulsion of spinal cord substance derived from a susceptible animal is harmless to mice and even to guinea-pigs. On this observation Wassermann[2] based his theory of "Seitenketten-Immunität," according to which a toxin is neutralised (*a*) *in vitro* and (*b*) *in corpore* by saturating its toxophoric atoms with those cell substances for which these atoms have a specific affinity. By the term toxin is meant that class of poisons against which an immunity may be established by repeated injection under suitable conditions and which then lead to the appearance of specific antitoxins in the blood of the immunised animal.

The method I employed in testing the antidotal properties of normal tissues was to emulsify the various organs of a susceptible animal—the guinea-pig being used in most cases—with

[1] Werthbemessung des Diphtherieheilserums: Klinisches Jahrbuch, 1897.

[2] Berliner Klinische Wochenschrift, 1898, No. 10.

physiological saline solution, to mix the emulsion with the cobra poison, and then to test the action of the mixture on guinea-pigs. For inoculation guinea-pigs also were employed, weighing between 250 and 350 grammes. For such animals the minimal certainly letha dose was 0·1 milligramme of the dried venom. In these experiments 0·15 milligramme was injected, a dose which causes death of the controls in from two to three hours.

Cobra poison belongs to the class of toxins as above defined and contains at least two toxic substances. One of these is hæmolytic—i.e., it alters the red blood corpuscles, setting free the hæmoglobin they contain; the other is a nerve poison, which probably acts on the respiratory centre, and possibly also on other parts of the nervous system. Therefore I made a considerable number of experiments on various parts of the nervous system—e.g., the medulla, the cerebral cortex, and the spinal cord of the guinea-pig and the bullock. The toxicity of cobra poison is not, however, perceptibly altered by mixture with an emulsion of any part of the nervous system or by mixture with the blood or the serum of a susceptible animal. Calmette [3] independently has made similar experiments with the brain of the rabbit and of Bothrops lanceolatus and has obtained similar results. The liver, too, was subjected to a careful examination, because of its action on certain alkaloids [4] and also because of the impunity with which enormous doses of snake poison may be given *per os*. Moreover, as Fraser [5] has recently shown, the bile of various animals prevents death when injected simultaneously with this poison or even subsequently into the opposite side of the body. However, in no case did I succeed in averting or delaying death by the injection of liver emulsion with the venom. On one or two occasions I found that if a solution of poison be added to liver substance, and the mixture be ground up and allowed to stand for twenty-four hours, on injection of such a volume of the supernatant fluid as should contain a lethal dose the animal survives or dies after a longer interval than the control. But even by this method a positive result is not constant and the fallacy of assuming that the poison is equally diffused throughout the mass is obvious. When a certainly lethal dose is added to liver substance already emulsified with saline solution injection of the mixture leads to death with the same symptoms and in the same time as pure cobra poison alone. I have therefore not been able to confirm Professor Kanthack's [6] observations, that liver extract has a marked retarding influence on the action of cobra venom. But Professor Kanthack himself confesses that in one case where he was working with the liver extract of a young rabbit he had obtained no antitoxic effect.

The suprarenal capsules were indeed the only organs which invariably influenced cobra poison. With emulsions of bone-marrow, kidney, lymphatic gland, muscle substance, ovary, spleen, testicle, thymus, uniformly negative results were obtained. In my first experiments on the suprarenals I used those of the guinea-pig and found that in most cases the animals survived, and when death occurred it was considerably delayed. I then tried the suprarenals of the sheep and bullock and found that when fresh they invariably prevented death. *The medulla is inactive in this respect, the cortex alone protecting.* This, then, is probably the explanation of the variancy in the results with the guinea-pig's suprarenals which I occasionally obtained. For in these animals not only are the capsules small but they consist almost entirely of medulla. Rabbits' and sheep's suprarenals also protect.

I then tried the action of tabloids of various organs, using the preparations of Messrs. Burroughs, Wellcome and Co., and found here too that the suprarenal tabloids alone had any action, though the effect of the tabloids is less certain than that of the fresh glands.

This action then of the suprarenals is not shared by any other organ in the body and this fact alone suggests that mechanical precipitation of the poison is not an important factor of their protective power. And as injection of the suprarenal emulsion either mixed with the poison on the same side or by itself on the opposite side of the body alike prevents death, mechanical action, if it even occurs, must play but a very small part. And since, even when administered in large quantities, they only influence amounts of poison just above the minimal lethal dose, and cannot protect against multiple doses, we must conclude that they do not contain an antitoxin, that is, a substance which neutralises the poison *in vitro*.

The suprarenal cortex, then, of susceptible animals contains another of those substances, such as bile salts, cholesterin, tyrosin,[7] which somehow raise the natural resistance of the animal and so prevent death from doses slightly above the minimal lethal. It is noticeable too that the body of the animal most susceptible to cobra poison—viz., the guinea-pig—contains no substance which will combine with this poison *in vitro*, as Wassermann and Takaki [8] and others have found for tetanus, and more recently Kempner and Schepilewsky [9] for the "Botulismus-gift." Whether Wassermann's theory will prove valid or not for all toxins with a measurable incubation period at least it does not agree with the facts above summarised for poison.

Birmingham.

[3] Annales de l'Institut Pasteur, tome xii., No. 5.
[4] Roger: Archives de Physiologie, 1892. Action du Foie sur les Poisons. Paris.
[5] Wiener Medicinische Blätter, 1897, No. 29, p. 481, and Brit. Med. Jour., 1897, vol. i.
[6] Twenty-fifth Annual Report of the Local Government Board, 1895–6, p. 250.
[7] Phisalix: Comptes Rendus de la Société des Sciences Naturelles, 1897.
[8] Berliner Klinische Wochenschrift, 1898, No. 1.
[9] Zeitschrift für Hygiene, 1898, No. 11.

SOME REMARKS UPON A NEW MYDRIATIC.

BY SYDNEY STEPHENSON, M.B., C.M., F.R.C.S. EDIN.,
OPHTHALMIC SURGEON TO THE EVELINA HOSPITAL AND TO THE NORTH-EASTERN HOSPITAL FOR CHILDREN, ETC.

THE claims of ephedrine hydrochloride as an agent for dilating the pupil have been before the profession for several years, but apparently without attracting anything like general attention. The first communication upon the subject was made by a Japanese physician, Kinnosuke Miura,[1] and this was soon followed by papers from the pens of J. Inouye [2] and A. de Vriese.[3] From these contributions, however, it was clear that the dilatation of the pupil induced by ephedrine was of moderate extent only, although it possessed the great practical advantage of passing off rather quickly (in from 1 to 20 hours). Later it was found that the action of ephedrine could be enhanced by the addition of a trace of homatropine hydrochlorate in the proportion of a hundredth part of the latter to one part of the former substance. This observation led E. Merck, the well-known Darmstadt pharmacist, to combine the two medicaments. The new agent, which is known as "mydrin," is a white powder, readily soluble in water. Its physiological action has been reported upon by Groenouw [4] in Germany, by Suker [5] in America, by Cattaneo [6] in Italy, and by Mr. Simeon Snell [7] in this country. These various observers find that a 10 per cent. aqueous solution when dropped into the eye has the power of dilating the pupil moderately within a few minutes, without affecting accommodation in the least. They also agree that the action of the pupil to light is to some extent retained while the eye is under the influence of the drug, the effects of which pass away within from 4 to 6 hours. In no instance have they seen any irritation or inflammation result from the application. Groenouw, who experimented on 100 patients, found that the dilated pupil had an average diameter of 5·6 mm. Suker speaks of mydrin as "an ideal mydriatic for diagnostic purposes," and Mr. Snell's experiences appear also to have been equally favourable.

These claims seemed to me too strong to be set on one side without investigation. Accordingly for some time past I have used a 10 per cent. watery solution of mydrin for the purpose of dilating the pupil, when I wished to explore all parts of the fundus oculi with the ophthalmoscope or to examine the cornea carefully in order to ascertain the presence or absence of slight changes. Moreover, for the

[1] Berliner Klinische Wochenschrift, No. 38, 1887.
[2] Klinische Monatsblätter für Augenheilkunde, Band xxvii. (1889), p. 376.
[3] Annales d'Oculistique, tome ci. (1889), p. 182.
[4] Deutsche Medicinische Wochenschrift, No. 10, 1894, p. 161 (quoted in Jahresbericht der Ophthalmologie, 1895, p. 265).
[5] New York Medical Journal, June 8th, 1895, p. 714.
[6] La Clinica Moderna, June, 1896 (quoted in Merck's Annual Report for the year 1896).
[7] Clinical Journal, Nov. 13th, 1895.

purposes of more exact study I have recently taken 20 patients and noted in each one (*a*) the near and distant sight, and (*b*) the diameter of the pupil. A single drop of mydrin solution (10 per cent.) was then placed in the conjunctival sac, after which the following points were observed: (*a*) the time at which the pupils became dilated; (*b*) the transverse diameter of the pupils; (*c*) the near and distant vision; and (*d*) the time at which mydriasis passed away.

The results obtained in this way may be thus briefly related. The pupil became dilated in a period which varied, according to the individual, from 15 to 68 minutes, the average of the 20 observations being 29·35 minutes. The mydriasis was found to ensue more speedily if patients kept their eyelids closed after the application had been made. Owing to the fact that the iris did not completely lose its action to light, there was some little difficulty in measuring the size of the dilated pupil, the transverse diameter of which ranged from 5 to 7·5 mm., and averaged 6 mm. For a similar reason it was not altogether easy to say with precision when mydriasis had passed away. But in no instance did the maximum time (after full dilatation) exceed 4 hours, while the minimum stood at 75 minutes. The average worked out at 184·84 minutes—that is to say, a trifle more than 3 hours. In no case did sight, either for distant or near objects, show any alteration when the eye was fully under the influence of mydrin, a remark which applies also to the position of the punctum proximum. Lastly, it is practically important to note that the agent set up neither discomfort nor irritation.

As the result of my observations I have reached the conclusion that mydrin is capable of doing all that writers have claimed for it—namely, that it causes a moderate dilatation of the pupil without involving the function of accommodation. It cannot but prove, therefore, a valuable agent in the hands, not only of the ophthalmic surgeon, but also of the physician, who must often be desirous of exploring the fundus oculi with a dilated pupil.

Welbeck-street, W.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Procemium.

ROYAL FREE HOSPITAL.

A CASE OF MALIGNANT PUSTULE; DEATH; NECROPSY.

(Under the care of Mr. E. W. ROUGHTON.)

THE methods by which persons become infected by communicable diseases are often obscure, but in the following case it is practically certain that the patient was infected from one of the hides with which he was working. Attempts have been made to destroy the bacillus anthracis in bales of material which may contain it, and these attempts have been very successful in the case of wool, for it may be subjected without damage to a temperature sufficiently high to kill the bacillus, but hides are spoilt by this treatment, and, so far as we are aware, no satisfactory practical method exists of rendering hides which have been taken from diseased animals absolutely free from power of infection. The negative result of the culture from the blood is hardly sufficient to prove that no bacilli had entered the blood stream; in many of the fatal cases death is due to absorption of toxins and not to the presence of the bacilli in the blood. For the notes of the case we are indebted to Dr. R. P. Williams, house surgeon.

A man, aged fifty-three years, was admitted to the Royal Free Hospital on April 29th complaining of a sore and swelling of the right side of the neck. The patient was a blacksmith employed at the General Parcels Post Office, Clerkenwell. On April 26th he was engaged in mending Parcel Post baskets with strips of raw cowhide. The cowhides are imported from various parts of the world and are chosen by a Government inspector. The particular hides which the patient was using probably came from Rangoon or Zanzibar. He noticed a pimple on the right side of the back of his neck on the 27th and he scratched it. It did not trouble him till the night of the 28th when he found a swelling round a small sore in the original situation. On the following morning (the 29th) he felt so ill that he had to cease work and he was directed to go to his medical attendant, who sent him on to the hospital.

On admission the patient was found to have a typical malignant pustule situated on the right side of his neck. The brawny œdema extended above to the parotid and below to the right clavicle. On microscopic examination of the serum from the vesicles anthrax bacilli were found in large numbers. His temperature was normal. Mr. Roughton operated on the same day, excising the pustule and the skin for 1½ in. around it. The wound was swabbed with pure carbolic acid and left open, being dressed with cyanide gauze soaked in a 1 in 1000 biniodide of mercury solution. This was changed every four hours.

After the operation the temperature rose from normal to 99·2° F. and at 10 P.M. it reached 101·8°. The patient had no sleep during the night and in the morning the œdema had spread down the right side of the chest. The temperature fell to 100° in the evening (the 30th) and he vomited several times. Two bluish patches were noticed in the skin below the right clavicle. These gradually spread, the œdema itself also spreading to the left side of the chest and down towards the pelvis. No diarrhœa was present. The patient gradually became collapsed and, in spite of stimulants, died at 1 P.M. on May 1st.

At 10 P.M. on April 30th two cultivations on gelatin were made from the blood, one from the left index finger and the other from the œdema on the chest. No anthrax bacilli were found in either tube.

Necropsy.—At the post-mortem examination the vessels of the pleura and the intestines were injected but no other gross pathological condition was found.

ANCOATS HOSPITAL, MANCHESTER.

TWO CASES OF ECTOPIC PREGNANCY; RECOVERY.

(Under the care of Mr. STANMORE BISHOP.)

THE following two cases show clearly the benefit of early surgical treatment in ectopic gestation. The older methods, such as electricity, are being discarded, and it is more and more recognised that the best results are obtainable by early laparotomy. The operation should be performed as soon as the diagnosis is made with any fair degree of probability. Delay of even a few days may lead to a fatal issue.[1]

CASE 1. *Hæmatocele in Douglas's pouch; enlarged perforated Fallopian tube containing a clot; probable ectopic pregnancy; cœliotomy; recovery.*—A married woman, aged twenty-eight years, was admitted to the Ancoats Hospital on Sept. 14th, 1897. She had been married for eleven years and had had four confinements and one miscarriage. Her father died at the age of thirty-seven years from fever and her mother died at the age of sixty-five years from pneumonia. Nine of her brothers were dead; the causes of death were not known; two sisters and one brother were alive and in good health. The patient had always been healthy up to the time of her marriage. Her first labour occurred ten years ago; instruments were used, but there was no trouble with the placenta. She got up well, the child living. Her second labour occurred nine years ago; it was easy and her convalescence was normal; the child died from meningitis due to a fall. Her third labour occurred six and a half years ago; it was easy and her convalescence was normal, the child living. Her fourth labour (a miscarriage at three months) occurred five years ago. She got up well, had one period, and then became pregnant again. Her fifth labour occurred four years ago; the pregnancy was normal; the confinement lasted five days and no forceps were used. She was attended by a midwife and had never been well since. She noticed pain in the left iliac region before getting up. She was in bed for two months and pain had been intermittent ever since. The pain never occurred on the right side. The left leg had been painful and aching, but not

[1] American Journal of Obstetrics, April, 1895.

swollen. She had had much general swelling of the abdomen. Her periods had been regular since her last confinement to July, 1897. Then she was nearly eight weeks without any loss. At the end of August bleeding began and had never entirely ceased up to the date of her admission to hospital. On the first day she passed a clot but no formed material, shreds, or membranes since, passing nothing but blood or bloody fluid. Urination and defecation were normal. The appetite was feeble. There was no vomiting. Sleep was interrupted by pain of a gnawing character. The pain came suddenly, lasted for five or six hours, and went off gradually. During the pain the discharge increased. The temperature was 100·2° F. on admission. There was some pain on fully extending the left leg.

On Sept. 26th the temperature had fluctuated between 97·4° F. and 99° since admission. On vaginal examination the os was found to be split and the cervix open. The sound passed forwards at a normal length. The uterus was in the median line. Behind in Douglas's pouch there was a soft, elastic mass from which the uterus could be partially separated and which extended mostly on the left side. The broad ligament was palpable on the right side, but could not be defined on the left. The patient was a short, stout, healthy-looking woman. The diagnosis was a doubtful one—either pyosalpinx or ectopic pregnancy—but the weight of probability seemed in favour of the latter. The temperature between Sept. 26th and Oct. 4th, the date of operation, was more uniformly normal than it had been at any previous time, never rising above the normal line or descending below 97·6° except on the morning of the 4th, when it was 97·2°. There was no sudden pain or collapse.

On Oct. 4th cœliotomy was performed. The patient was placed in the dorsal position. On the right side there was a small multilocular cyst of the ovary of the size of a cricket-ball; this cyst was removed. On the same side the Fallopian tube was closed and swollen; the fimbriæ had disappeared. This was also removed and the stump was sewn over. Below in Douglas's pouch there was a collection of black clot weighing about 5 oz. which was cleared out by hand and sponges. The wall was cleared as much as possible of rough fibrinous material. The cavity containing this clot was roofed over by loosely adherent intestine and the spread-out left tube, which was much enlarged, and contained an adherent semi-decolourised clot, situated rather outside the middle of the tube. The tube had given way near its uterine extremity. All these parts were fixed by adhesions which yielded readily. The abdomen was closed by a triple suture and was sealed by celloidin. No flushing or drainage was employed. There was no great amount of shock. The operation was over about 1 P.M.

Calomel was given in grain doses every hour, commencing two hours after the operation; seven doses were administered. The patient had nutrient enemata every two hours. As there was a great amount of pain a ¼ gr. morphia suppository was inserted. The catheter was used at 5.30 P.M. and 6 oz. of urine were drawn off at 7.15 P.M. As no flatus had passed by 12.30 A.M. 3 gr. of sulphate of magnesium were given, but were immediately vomited. A sulphate of magnesium enema was given at 11 A.M. on the 5th. The bowels were moved at 6.15 P.M., 6.30 P.M., 8 P.M., and 9.15 P.M. on the same day. There was a little vomiting after the action at 8 P.M. but not afterwards. On the 6th at 3 A.M. a bloody discharge appeared *per vaginam*, but it was never excessive. It gradually decreased until the 8th. No shreds or definable masses were discharged. At 10 A.M. the nutrient enemata were stopped and feeding by the mouth was begun. On the 6th she passed a small amount of urine naturally at 10 P.M., but the catheter was again required until the 13th, when its use was discontinued. On the 17th the progress had been uneventful. The celloidin became loose and was removed with the external sutures on the 15th or the eleventh day. Primary union had taken place except at one point where a small clot had formed between the edges and had thus prevented the line of junction from being uniform. The bowels and bladder had acted regularly. She had been placed on ordinary diet on the 16th. On the 23rd the patient was discharged from the hospital well.

CASE 2. *Ectopic pregnancy; diagnosis before rupture; cœliotomy; removal; recovery.*—A married woman, aged twenty years, was admitted to the hospital on March 3rd, 1893. She was short, dark, and well-developed. She had had one miscarriage eighteen months ago before marriage. She had otherwise been perfectly healthy. She had been married for sixteen months. Her periods, with the above exception, had been regular and normal until two months previously to admission, when she went fourteen days over the proper time. There had been more or less discharge ever since with several shreds and clots. These, however, had been thrown away. She first noticed pain on the left side on Feb. 26th; this came on suddenly whilst she was kneeling as she cleaned the floor. The pain had come in paroxysms ever since. Before entering the hospital the pain was of a bearing-down character, but since lying in bed the character had altered. There was no longer any bearing down, but there was still acute paroxysmal pain and the attacks were becoming more frequent. During the missed fortnight she vomited twice, but she did not vomit after this until the day of admission. She had vomited everything since. She felt as though her left leg dragged upon the parts inside when it was fully extended. There was no pain on defecation but a little sharp pain occurred on micturition.

Bimanual examination showed that the uterus was normal in position and size; the os was perhaps a little softened. A boggy mass of unequal consistence and of about the thickness of a Cambridge sausage, and not unlike it in shape, was close to the uterus, but not fixed to it, and was to be felt in the left fornix; there was some pulsation between it and the finger. Nothing was to be felt in Douglas's pouch. The abdomen was supple, but the skin was dry and harsh. The breathing was costo-abdominal. The pulse was 68, the temperature was 99·4° F., and the respirations were 16. The colour of the lips was good. The face was placid except when the pain returned, when it indicated considerable suffering. A diagnosis of extra-uterine pregnancy, as yet unruptured, was made, and a dose of nepenthe was given. The patient slept for the first part of the night, but the pain woke her up in the early morning and continued with intervals until the operation was performed at 11 A.M. She was wheeled into the theatre, but she got upon the table without assistance.

On March 4th, with the patient in the Trendelenburg position, abdominal section was performed. There was no blood seen under the peritoneum. When this was opened there immediately came into view the left tube which was much enlarged and engorged with blood. About its centre a large rent was seen which was plugged by a firm clot dark red in colour. The abdominal end was closed, curled round and adherent to the ovary. The tube was clamped at both ends, tied and removed. One small adhesion of the tip of the omentum was also tied and divided. In Douglas's pouch, which was unusually deep, some dark clots and fluid blood were found; these and some more dark blood which was found floating amongst the intestines were sponged out. No irrigation was employed. The right ovary was enlarged and cystic and was removed. The right Fallopian tube was enlarged, thickened, and elongated, but otherwise it was healthy; it was left. All raw surfaces, including the stumps, were sewn over by fine catgut, so restoring the continuity of the peritoneum. No drainage was used. The uterus was noted as being slightly enlarged, roughened, and reddened. The abdomen was closed by triple suture and the wound was covered by celloidin.

On returning the patient to bed the temperature was 98·6°, the pulse was 96, and the respirations were 28. There was slight hiccough and she complained of some pain in the back and abdomen, but this had disappeared by the next morning after a hypodermic injection of morphia. Once she passed urine involuntarily, about 3 A.M. on the morning of the 5th, but always naturally afterwards, not requiring the catheter. She vomited once only. A grain of calomel was given every hour for 6 hours. Flatus was passed at 6 P.M. on the second day and the bowels were moved at 10 A.M. on the third, about 48 hours after the operation. In accordance with the usual practice at the Ancoats Hospital nothing was given by the mouth for the first 48 hours, after which feeding was begun with hot milk and beef-tea in small quantities. Nutrient enemata, however, were given after the first 24 hours. There had been no further loss of blood *per vaginam* after the operation until 2 P.M. on the third day, when some slight discharge occurred. This continued and increased until the eighth day, when it decreased and ceased on the ninth. No more shreds or any mass which could be recognised as decidua were seen and that day it was noted that the os

was quite closed. At no time was the discharge offensive. The sutures were removed on the ninth day, when primary union of the wound was found to have taken place. The abdomen was supple and undistended. Two days after the operation there was slight tenderness on pressure over the left iliac region. This quickly disappeared and the patient rapidly recovered.

Remarks by MR. STANMORE BISHOP.—The entire absence of shock or collapse or of any noteworthy pain before the operation, which usually shows that rupture of the tube has occurred and considerable loss of blood has taken place into the general cavity of the abdomen, in both cases, is perhaps worthy of attention. The character of the clots pointed to the occurrence as having taken place within 48 hours before. There was no extra pain or collapse and the patient slept as comfortably as usual on the night before the operation.

YORK COUNTY HOSPITAL.

A CASE OF AMENORRHŒA FOR TWO YEARS; SMALL SOLID TUMOUR IN THE LEFT OVARY; REMOVAL OF TUMOUR; RETURN OF MENSTRUATION; PREGNANCY.

(Under the care of Mr. W. H. JALLAND.)

THE patient, aged twenty-six years, was married, but had never been pregnant. She came under Mr. Jalland's care at the York County Hospital and stated that she had suffered from amenorrhœa for two years, which she considered to be due to over-exertion when she was nursing her mother. She was rather anæmic in appearance, but she had no pain or other symptom. Upon examination a small tumour of about the size of a large hen's egg was detected on the left side of the uterus, being apparently connected with the left ovary. The uterus was small and the sound passed barely 2 in. The os was conical with an almost pin-hole aperture. Removal of the tumour was advised, and the patient consented. The operation was performed in the usual way on Feb. 23rd. The tumour proved to be a small solid one which had no adhesions. The patient made an uninterrupted recovery, which presented no particular points of interest. She began to menstruate in a normal way on March 23rd and continued to do so regularly each month until June when she became pregnant. She called Mr. Jalland to see her in October last year, when he found that she was between four and five months advanced in pregnancy. He saw her again in May of this year, she having been confined of a healthy child two months previously. She had lost all her anæmia and looked the picture of health and happiness.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Treatment of Chronic Bright's Disease.—Rheumatic Dilatation of the Heart.

A MEETING of this society was held on June 28th, the President, Mr. BRYANT, being in the chair.

Dr. EWART read a paper on the Treatment of Chronic Bright's Disease (Tubal Nephritis). He pointed out that the methods of treatment, medicinal and general, hitherto adopted in tubal nephritis had not proved curative of the disease or always of its symptoms. On the other hand, the complete and apparently spontaneous recovery of some cases after long periods of ineffectual treatment showed that the lesions were not necessarily incurable or fatally destructive of the renal structure or function. The cases considered in the paper were strictly those of uncomplicated tubal nephritis with dropsy, a disease which left no permanent lesion behind it and which might be regarded as an inveterate epithelial catarrh. In other varieties of kidney disease this epithelial catarrh was only one of the features; they presented more or less intertubal and Malpighian congestion and cellular proliferation and varying degrees of fibroid proliferation throughout the organ. Their treatment was much less hopeful. In them, as also in the purely tubal nephritis, the albuminuria was a separate factor; and this was not necessarily amenable to the treatment which might prove curative of the dropsy. The group of "acute nephritis" presented great analogy with that of chronic tubal nephritis and the indications were largely the same, but its treatment could only be referred to incidentally. The usual well-known features of tubal nephritis were—(1) the dropsy; (2) the anæmia; (3) the oliguria; and (4) the cachexia and marasmus, disguised by the persistent œdema and paving the way to fatal complications or exhaustion. The treatment described was based upon a consideration of these symptoms and particularly of the œdema. Dropsy might be considered as nature's protection and remedy against fatal intoxication; but also, if not dealt with therapeutically, as nature's difficulty and danger. In itself œdema was harmful when persistent by oppressing the tissues, choking the lymphatic circulation and impeding metabolism. So long as it was present it hindered nutrition both locally and in general. Its usual treatment by horizontal rest in bed further depressed the vital functions. These were the systematic evils of œdema. Another set of results affected the kidney itself, the impeded nutrition of which was rendered more difficult by the absence of a free lymphatic flow. By virtue of this persistent œdema tubal nephritis became a lymphatic disease and its treatment might properly be considered from the point of view of the lymphatic system. The indication was to relieve the lymphatic system of the œdema over as large an area as possible and to ensure its escape by systematic drainage. This was to be effected by posture, since gravitation tells upon renal dropsy, although less than upon cardiac œdema. The œdema should be allowed to collect in the lower limbs by slanting the bed, and meanwhile the trunk and the upper limbs, relieved of their puffiness, can be restored to healthier action by massage. Acupuncture or incision and drainage afforded positive relief to the œdematous tissue of the entire body, to the serous cavities if previously occupied by fluid, and to the lymphatic circulation. They also fulfilled the first indication, that of removing from the body the accumulation of contaminated fluid. Moreover, if persevered in systematically, this treatment satisfied the primary indication of physiological rest to the kidney by opening up another channel of exit for the ingested fluids. The lymphatic system then became to a great extent the channel of emunction. A surcharge of the blood with alimentary and with effete products being largely obviated, a varied and sustaining diet could be prescribed, and on the strength of the latter a larger share of renovating exercise might be allowed than was otherwise possible. It had been shown by Hamilton[1] that the inflammatory products of nephritis were largely removed through the lymphatics of the kidney, a mode of relief analogous to that observed in pneumonia. This observation was in harmony with the *rationale* of the method advocated by Dr. Ewart, and it suggested that a free lymphatic circulation was an essential part of the treatment of the kidney in nephritis. The broad indication which had suggested itself to Dr. Ewart was to place every function in the most normal condition possible in order to assist nature in repairing the local damage. It had seemed to him that the prevailing methods had failed—(1) by not systematically relieving the œdema, but rather promoting its prominence all over the body; (2) by imperfectly carrying out the indication of physiological rest to the kidney; (3) by endeavouring to obtain diuresis by medication and to influence the tissue changes by alteratives at a time when the nutrition of the kidney as well as its function were in abeyance, whilst the treatment by sweating and by purging had often proved an additional trial to the strength; and (4) by neglecting the measures both of hygiene and of diet which were most likely to restore normal strength and nutrition to the system constitutionally and locally to the kidney. The special objects of the treatment proposed were: (1) to unblock the lymphatic ways choked by œdema; (2) to establish a thorough flow from the blood, and particularly from that of the renal district, into the lymphatics, whereby soluble solids and toxic products may be removed; and (3) to quicken artificially the lymphatic circulation by passive movement, general massage, &c., so as to favour nutrition and metabolism of the entire body, and by that means of the kidney also. When the œdema was general or localised elsewhere the first indication is to bring it down to the feet by slanting the bed. Southey's tubes, or small incisions where

[1] Journal of Anatomy and Physiology, vol. xxv., pp. 196-200.

these could be made into dilated lymphatics, preferably at the back of the ankle, were the means of draining the œdema. Every antiseptic precaution must precede the operation and must be kept up throughout the case, the part being kept covered by antiseptic dressings, and the entire foot covered with vaseline to prevent soakage of the skin. Large quantities of fluid might be got rid of in this way. In one case the drainage was kept up for two months. Whilst the flow continued a liberal diet could be adopted, the chief aim of the treatment being to raise the patient's strength, but it might be necessary at times to return for a few days to a strictly milk diet. This would help to restore an abundant flow where the latter tended to dry up. A moderate allowance of tonic wine, such as Burgundy, St. Raphäel, or claret, was part of the dietetic treatment. The patient in any recent case would soon be able to sit up and subsequently to walk about the room. Where prolonged illness had preceded the application of treatment active exercise would have to be carefully adjusted to the gradual return of strength. The ordinary rules applied as regards treatment of the liver and of the alimentary canal. One great object of this treatment was to restore cardiac energy and nutrition, which ultimately tended to fail. This object being partly attained drugs could be tried with much better results. Digitalis might then assist both the heart and the kidney. Iron, indicated by the anæmia, would be better borne and such drugs as mercury and arsenic as well as the bitter tonics could be tried with much greater prospect of success. The treatment described was specially devised for cases of dropsy. The advantages to be gained from it were not, however, necessarily restricted to such cases. Uræmia occurring without dropsy was treated by the removal of so much blood. Analogous relief might be secured without the sacrifice entailed by venesection if a sufficient flow of lymph could be obtained by artificially setting up dropsy of one or both lower limbs. Dr. Ewart had succeeded in fulfilling this indication in a case where the œdema was exceedingly slight although affecting the face as well as the lower limbs. The case not presenting urgent symptoms did not justify severe measures; nevertheless, the artificial œdema was kept up for 12 days and the flow obtained through a single incision continued 7 days, although it was never considerable. The local œdema was obtained by the diffused pressure from a tourniquet applied over cotton wool and cardboard to Scarpa's triangle. Martin's bandage was subsequently substituted for the tourniquet. The treatment suggested addressed itself indirectly only to those conditions which kept up albuminuria independently of nephritis and to the restoration of that part of the renal function supposed to be concerned with active internal secretion; and it claimed merely to be an endeavour to assist vicariously the excretory mechanism of the kidney. It was felt, however, that if this indication could be fulfilled the other renal functions would benefit in a large proportion also.—Dr. HOWSHIP DICKINSON demurred to the use of the term large white kidney by Dr. Ewart as synonymous with tubal nephritis. In the large white kidney there was much hypernucleation and increase of the interstitial connective tissue. He thought also that Dr. Ewart undervalued the part played by the tubes of the kidney itself in carrying off the morbid products. Without unduly disparaging the part played by the lymphatics he held that the tubes were the chief channels of excretion, as shown by the abundance of tube casts and epithelial débris seen in the urine, often in sufficient quantity to form a deposit which could be seen by the naked eye. Dr. Ewart claimed that by drawing off the œdema he could relieve the ascites and hydrothorax, but Dr. Dickinson held that although drawing off an ascitic or a pleural effusion might relieve œdema of the legs by taking off pressure from the central veins the converse did not hold. He did not take such an unfavourable view of the prognosis in these cases as Dr. Ewart appeared to do. It was true that in the old days some cases were cut short by too active treatment, but he had found that following familiar lines renal dropsy was very amenable to treatment. Treatment by puncture or incision was a very old one which had been formerly discredited owing to frequent supervention of erysipelas or septic cellulitis. But now, owing to Listerian methods, it could be practised with little risk and Dr. Ewart had done well to bring it prominently forward. But he was not clear how far such drainage would relieve the uræmic condition. It was true that occasionally patients expressed themselves as better when œdema occurred and it was true that there was urea in the dropsical fluid in such cases. But there was also urea in the blood in the same cases and he thought it probable that the urea escaped from the blood by simple filtration just as the other saline constituents did, and were not thrown off as an excretion. Experience had led him always to try to prevent dropsy or to remove it when present, but Dr. Ewart had so high an opinion of it that he proposed to induce it artificially. He did not appear to have been very successful, and, even if he had, the relief to the uræmic process must have been small. Dr. Dickinson thought that in all cases of renal dropsy there was a tendency, which varied in different cases, to spontaneous recovery which might not show itself for a long time. He thought that this recovery was contemporary with the occurrence of hypertrophy of the left ventricle.—Dr. NORMAN MOORE asked for details of the number of cases observed and the course of the symptoms. Dr. Ewart had drawn attention to the importance of keeping up the action of the heart under treatment, a point insisted on by Southey. It was rare to examine cases of renal disease (other than acute ones) post mortem without finding degenerative processes in the heart wall. There was no doubt a great difference in the clinical type as presented by the two sexes. A woman had about three times as long an expectation of life as a man similarly affected, possibly owing to the different ways of life. He thought that much active exercise was dangerous and that a man's life when convalescent should approximate to that of a woman engaged in ordinary domestic duties.—Sir DYCE DUCKWORTH agreed with Dr. Dickinson in his remarks as to the pathology and as to the importance of the personal element in these cases. In his experience the prognosis was particularly bad in the case of persons of a strumous habit. He took a less gloomy view of the prognosis than Dr. Ewart and relied chiefly on warmth, diuretics, and tonics, and did not restrict his patients to a milk diet. Free incisions with antiseptic precautions often gave great relief.—Dr. EWART, in reply, said that with regard to the possibility of relieving the ascites by drainage of the œdema of the legs he could only say that in the case which formed the text of his paper the ascites had been previously tapped without relief to the symptoms, but that after the œdema had been relieved by incision the ascites rapidly disappeared and on the second day the patient's urinary secretion rose and no doubt helped to carry off the fluid. In another case 150 oz. were removed by incision and in 48 hours the ascites had nearly gone. As regards the use of the term "large white kidney" he admitted that in the class of cases to which he had referred there was intertubal proliferation, but he thought that it was possible to arrest this before it passed on to the formation of fibrous tissue. He did not see how ventricular hypertrophy, being associated with fibrosis of the kidney, would leave the patient any better off, and he regarded the hypertrophy itself as a very undesirable possession. The removal of the dropsy was only a preliminary to feeding up and endeavouring to improve the general condition of the patient, which could not be done while every cell in the body was sodden by the œdema. Although he had only had two cases he thought that the results were so encouraging that he ought to bring them before the society.

Dr. D. B. LEES read a paper on Acute Dilatation of the Heart in Rheumatic Fever. In this paper attention was drawn to the fact that an acute dilatation of the heart was a common occurrence in a rheumatic attack, even when arthritis and pyrexia were slight in amount, and apart from distinct endocarditis and from pericarditis; also that an acute dilatation might, in a more severe attack, intensify the signs and symptoms of pericarditis or endocarditis. The evidence adduced in support of these propositions consisted of tracings of the cardiac dulness at different stages of a rheumatic attack taken by Dr. Lees from patients under his care at St. Mary's Hospital. The question was first discussed whether it was possible by percussion to obtain an accurate knowledge of the actual size of the heart. Reference was made to the writings of Dr. Ewart and to the post-mortem investigations of Dr. Herringham in support of the contention that a tracing representing the outline obtained by careful percussion did indicate with very considerable accuracy the position of the limits of the heart, both to the left and to the right. Tracings taken from the cases showing the size of the cardiac dulness at different periods were thrown on the screen by a lantern. The first three sets of tracings were taken from young adults suffering from subacute rheumatism, with slight

arthritis and little pyrexia, with no evidence of pericarditis or distinct endocarditis. Three tracings of the cardiac dulness were shown from each of the cases, the first taken before commencing treatment, the second at an intermediate stage, and the third taken on recovery. They all showed the same events—a large extension of the dulness at first, with gradual reduction and final return to the normal. Next followed a set of tracings showing acute dilatation caused by a subacute attack in a heart already diseased by two previous attacks. The large extension of the cardiac dulness registered in the first diagram was seen to subside until it reached a permanent amount due to the previous disease. Lastly, a pair of tracings were shown from a case of rheumatic pericarditis with chorea, showing how acute dilatation may intensify the signs of pericarditis and how a rapid diminution in the area of the præcordial dulness may occur under treatment. It was claimed that these tracings, though doubtless open to criticism in details, were sufficient to prove that acute dilatation of the heart was a feature of rheumatism which deserved more attention than it had hitherto received. Reference was made to remarks on "swollen heart," by Dr. Sansom; also to specimens of dilated heart after rheumatism exhibited at the Pathological Society by Dr. Goodhart and Dr. West; also to Dr. Goodhart's paper on Acute Dilatation of the Heart after Scarlet Fever, and to a case of the same kind reported by Dr. Barlow. It was suggested that the acute cardiac dilatation produced by rheumatism was analogous to the acute dilatation often resulting from influenza, and that in both cases it was due to the poisonous action of a microbic toxin on the cardiac muscle, similar to the effect of dilute solutions of lactic acid and of certain drugs in causing cardiac dilatation, demonstrated many years ago by Dr. Gaskell.

Dr. D. B. LEES and Dr. F. J. POYNTON read a paper on Rheumatic Dilatation of the Heart in the Rheumatism and Chorea of Childhood. This paper recorded the results of a joint investigation of the subject of acute dilatation of the heart in the rheumatism and chorea of childhood carried out at the Hospital for Sick Children, Great Ormond-street, and results of certain inquiries conducted by Dr. Poynton in further elucidation of the subject. These include (1) observations on the hearts of children under the care of various physicians; (2) observations on the hearts of children free from rheumatism; and (3) an analysis of the post-mortem records of 150 cases of fatal rheumatic heart disease in children under twelve years of age. The paper commenced with statements as to the size, strength, and sounds of the heart in children free from rheumatism mainly deduced from Dr. Poynton's examination of the hearts of 45 patients in the surgical wards of the Hospital for Sick Children and of 35 healthy boys of twelve and thirteen years of age at Marlborough School. The observations on the hearts of rheumatic and choreic children were arranged in four groups: (1) cases of subacute rheumatism with no pericarditis and with no murmur or only a systolic murmur best heard internal to the nipple; (2) first attacks of chorea without any previous history of rheumatism and in the great majority of cases no present evidence of rheumatism except the chorea; (3) acute cases in which there were definite cardiac lesions, pericarditis, or undoubted endocarditis; and (4) cases of chronic and relapsing rheumatism. Tracings were given showing the size of the heart in two or three cases from each of these groups at different stages of the disease. They all showed a considerable increase at first in the area of cardiac dulness, which tended to diminish as improvement set in and which might again increase if a relapse of the disease occurred. During the periods of increase the cardiac impulse became diffused and displaced to the left; when the dulness diminished the impulse became stronger, more localised, and more normal in situation. The heart sounds also were altered when the area was increased, the first sound becoming weak and short, while the pulmonary second sound was accentuated. The sounds became more normal as the area diminished. From an analysis of the post-mortem records of 150 cases of fatal rheumatic heart disease in children under twelve years of age it was shown that dilatation was usually found. In 92 cases out of 150 (61 per cent.) special attention was called to its existence in the records. On the other hand, marked excess of pericardial fluid was rare; in only 12 cases of the 150 was more than 2 oz. noted. The value of acute cardiac dilatation as an aid in the diagnosis of arthritis of doubtful nature was pointed out. Dr. Lees and Dr. Poynton held that in many cases the effects attributed to valvular disease or to adherent pericardium might be mainly due to this dilatation, which tended to increase with each recurrence of rheumatism.—Dr. T. J. MACLAGAN observed that the tendency to cardiac complication diminished as life advanced, being much more frequent between the ages of fifteen and thirty years than afterwards, and in the anomalous cases in children attended by the presence of subcutaneous nodules serious heart mischief was almost constant. He thought that hitherto the myocardium had not received its due share of attention. It was notorious that rheumatism had a special effect on red muscle throughout the body as shown by the rapid softening and atrophy and by the excess of lactic acid present, and there was no reason why the cardiac muscle should escape. He himself would be inclined to hold that there was actual myocarditis. When a murmur was first heard it was usually presystolic and indicated an affection of the ring rather than of the flaps of the valve.—Dr. EWART congratulated Dr. Lees and Dr. Poynton on the way in which their research had been made. Since his attention had been drawn to these cases he had examined all that had come before him, but he was inclined to think that in many cases the increased dulness was due to pericardial effusion rather than to dilatation, and in support of this view he showed a number of diagrams.—Dr. NORMAN MOORE was inclined to share Dr. Ewart's doubts and asked what pathological evidence there was. The only cases he had met with which showed so much dilatation after death as had been described were cases of severe whooping-cough. He looked on endocarditis, not as a complication, but as the commencement of rheumatism, and held that the endocardium was affected in every case of true rheumatism.—Dr. THEODORE FISHER said that in cases of acute pericarditis which proved fatal early it was clear that the superficial inflammation could not be the cause of bringing the heart to a standstill and he believed, with Dr. Lees, that it was a toxin acting on the muscle. He quoted recent observations he had made on cases of fatal pericarditis in which extensive degenerative changes in the myocardium were found without any endocarditis.—Dr. LEES, in reply, said that the gradual reduction of the dulness as the rheumatic attack subsided and its immediate increase when there was relapse were consistent with dilatation rather than with effusion and this was entirely confirmed by the post-mortem records of over 150 cases. In only 12 was there any large effusion, while in no fewer than 92 there was dilatation, often extreme. On percussion there was no triangular patch of dulness near the right nipple such as Dr. Ewart held to be characteristic of pericardial effusion.

EDINBURGH OBSTETRICAL SOCIETY.

Exhibition of Specimens.—Analogues of the Male and Female Genital Tract.—The Position of the Promontory.

A MEETING of this society was held on June 22nd. Dr. MILNE MURRAY, vice-president, occupied the chair.

The following were elected by ballot as honorary Fellows of the Society: Dr. Charles J. Cullingworth, London; Dr. Lombe Atthill, Dublin; Professor S. Pozzi, Paris; Dr. G. Leopold, Dresden; Professor Howard A. Kelly, Baltimore; Professor Henry C. Coe, New York; and Dr. E. Doyen, Paris.

Professor SIMPSON showed specimens of Ovarian Tumours and Doyen's Forceps for Compressing the Pedicle in Ovariotomy.

Dr. BREWIS showed a Cyst with a twisted pedicle and a Large Ovarian Tumour weighing 40 lb.

Dr. FOULIS exhibited Dissections of Embryo Deer to Demonstrate the Development of the Sexual Organs.

Dr. BERRY HART read a paper on the Analogues of the Male and Female Genital Tract. He demonstrated that the sinus pocularis was the analogue of the hymen and lower third of the vagina and therefore that all below and including the sinus pocularis was equivalent to the lower third of the vagina and the vestibule. He had found traces of the uterus masculinus in the prostate of a four and a half months' male fœtus. He regarded the vagina as probably derived from the pronephros and the ovary and testis as certainly developed in connexion with the mesonephros. Thus the sexual glands and ducts were intimately correlated with

the Wolffian structure. The various analogues of the organs and the significance of the rudimentary organs in either sex were then considered and a limelight demonstration of specimens was given.—Dr. FOULIS, Professor SIMPSON, and Dr. MILNE MURRAY took part in the discussion on the paper and Dr. HART replied.

Dr. FREELAND BARBOUR gave the abstract of a paper on the Position of the Promontory as shown by Frozen Sections and its Effect on the Build of the Pelvis. Dr. Barbour while teaching students clinically found that there was very great difference in the height of the promontory of the sacrum above the symphysis. In order to determine this point accurately he made measurements of the pelves in 18 frozen sections. The anatomical conjugate was found to vary from 3·80 in. to 5·6 in. The obstetrical conjugate or the distance between the promontory and the nearest point of the symphysis varied from 3·44 in. to 5·28 in. This showed the available conjugate for obstetrical purposes. The difference between the anatomical and obstetrical conjugates varied from ¼ in. to ⅞ in. In order to ascertain accurately the height of the promontory above the pubes a line is drawn from the upper part of the symphysis horizontally backwards; another line is carried from the promontory of the sacrum perpendicularly downwards till it meets the horizontal arc. The measurement of the perpendicular gives the accurate height of the promontory above the symphysis. There is great variability, the promontory standing as high as 5 in. and as low as 2·4 in. above the pubes, the average being 3·7 in. If the horizontal line is carried backwards till it impinges on the posterior wall of the cavity it is found in 12 out of 16 available sections to strike the second coccygeal vertebra or a point below it. From this it is learned that the whole sacrum and a portion of the coccyx is above the level of the upper margin of the symphysis. Another item of interest is the angle formed at the symphysis by the meeting of the anatomical conjugate and the horizontal line. This angle varies from 33° to 65° and gives what Dr. Barbour calls the "set of the brim." He also gave measurements of the horizontal distance of the promontory backwards from the symphysis. These varied from 2·0 in. to 4·0 in., with an average of 2·64 in.—Dr. MILNE MURRAY and Dr. BERRY HART discussed the paper and Dr. BARBOUR replied.

Reviews and Notices of Books.

Diseases of the Nervous System (Lewis's Practical Series). By CHARLES E. BEEVOR, M.D., F.R.C.P. Lond. London: H. K. Lewis. 1898. Pp. xvi. and 432. Price 10*s.* 6*d.*

THIS handbook consists in all of twenty-nine chapters. The first four are preliminary in their character, dealing with the anatomy and physiology of the nervous system in a succinct and lucid but necessarily somewhat sketchy manner and with the methods of examination which should be followed in investigating cases of nervous disease. The rest of the book is devoted, section by section, to a short account of the various diseases of the nerves, spinal cord, and brain, and when it is stated that this account is given in 330 octavo pages it will be recognised that the description of each disease is necessarily short. But everything is very clearly put and for the senior student or busy practitioner the book will, we believe, be found extremely useful. Some of the chapters are particularly good, notably those in which organic brain disease is discussed. We think the author has been wise in leaving rather severely alone the new conceptions of nervous disease which the theory of the neuron necessarily introduces. It is more than likely that our ideas of nervous disease will have to be made to fit in with recent anatomical discoveries, but these are as yet too recent to be dealt with satisfactorily in such a handbook as this.

Several minor points may be noticed, not merely for the purpose of finding fault, but with the view of indicating the possibility of the existence of differences of opinion. In regard to tabes, for example, it is stated that syphilis occurs in from one-half to two-thirds of the cases as a predisposing cause. If we are not mistaken Erb in his most recent series of cases found that the proportion was much higher—as much as 90 per cent., we believe. Then, again, pseudo-hypertrophic paralysis and idiopathic muscular atrophy are described as different diseases. No doubt it is true that typical cases are distinct enough, but according to the most recent teaching on the subject these varieties are most likely the different ends of a long series with intermediate examples of varied combinations of the two conditions. And we venture to doubt whether in reference to the surgical treatment of epilepsy it is quite justifiable even in cases where the character of the fit clearly denotes a localised disorder to remove the piece of the cortex corresponding to the part in which the fits commence. These, however, are all points on which an author is entitled to his opinion, especially if the opinion is backed, as in this case, by wide experience and accurate observation. In a small work it would, of course, be unreasonable to expect anything more than the expression of an opinion. We cannot expect to have also the data on which the opinion is based. It is a pity, we think, that an account from the neurological aspect has not been given of general paralysis. Nearly all the descriptions of this disease are given in handbooks of mental disease and naturally from the mental aspect. It is now well known, however, that there are many cases of general paralysis in which the mental symptoms are subordinate to the physical. These are cases which come before the neurologist and a description of them from the neurological standpoint would have formed a valuable addition. On the whole, however, the author is to be congratulated on a work which is clear and, considering its size, wonderfully complete, and the publisher on a most useful addition to an eminently useful series.

Vade Mecum of Ophthalmological Therapeutics. By Dr. E. LANDOLT of Paris and Dr. P. GYGAX of Milwaukee. Translated by Dr. E. NEYMAN of Milwaukee. London: J. B. Lippincott Company. 1898. Pp. 138. Price 3*s.* 6*d.*

THE purchasers of this small volume will find arranged in alphabetical order the names of the chief diseases of the eye intercalated with which is a list of the various drugs and methods of treatment which have been employed for their relief; cross references are in many instances given and the appropriate dose of each drug is appended. Perhaps an example will best show the plan adopted and we select iritis. "Iritis, plastic, rheumatic, arthritic, blennorrhœic, syphilitic. *Mydriatics:* Atropine (23 a), alternating with duboisine (102) or combined with cocaine (23 b) or a combination of atropine, cocaine, and duboisine (23 c). Should the pupil not be enlarged by these solutions: Extract of belladonna or duboisine in substance (having care to close lachrymal points by pressure). Close the eyes for at least five minutes after instillation. Always watch the intraocular tension; as soon as tonus is + replace the mydriatics mentioned by scopolamine (284). *Rest for the Eyes.*—Bandage the eye affected; dark room or smoked glasses according to cause and intensity of disease. *Avoid* sudden changes of temperature, draughts, &c. Blood-letting or dry leeches at temple. Iodine ointment (146 b). *Poultices* (255), hot compresses. For severe pain hypodermic injections of morphia (231 c). Laxatives, diuresis, and diaphoresis (305). Etiologic treatment: Where there are other symptoms of *rheumatism* salicylate of soda (275), antipyrin (15), antifebrin (14), alkalies, acetate of potassium (254), lithia water (225 b). Turkish baths. In case of urethral blennorrhœa, salol (278) and energetic treatment of the urethral trouble. In *syphilis*, specific treatment (291)..

For dysmenorrhœa, scrofula and anæmia, strengthening treatment arsenic (20), iron (164), &c. *Continue mydriatics for some time* after inflammatory symptoms have disappeared. Should synechiæ capable of bringing on relapses remain iridectomy may be indicated." The numbers in parentheses refer to the corresponding headings in which the action and dose of the drug are given. It will be seen that there is little to be added to the above list of remedies which are employed in reducing iritis and that the work fully answers to its title. It will certainly prove very serviceable to those who are able to make a fairly good diagnosis of the nature of ophthalmic diseases, supplying them, as it does, with a concise pharmacopœia.

A Manual of General Pathology. By W. S. LAZARUS-BARLOW, M.D. Cantab., late Demonstrator of Pathology in the University of Cambridge. London: J. & A. Churchill. 1898. Pp. xi. and 795. Price 21*s.*

DR. LAZARUS-BARLOW has attempted a bold task and his attempt has met with no small amount of success. No original book dealing comprehensively with experimental pathology has previously been produced in the English language and the need for such a work was conspicuous. Cohnheim's "Lectures on General Pathology," translated by the New Sydenham Society, form, as they will no doubt continue to form for some time to come, the classic on the subject, and quite recently a portion of Thoma's valuable work has become available in English. But the translation of Cohnheim's work dates from 1882 and a more modern work is now necessary for students; while Thoma is so original in his treatment of some branches of the subject that he can hardly be considered to represent ordinary modern teaching in general pathology. Both the above-named works are, moreover, very bulky. This, then, is the gap which Dr. Lazarus-Barlow has endeavoured to fill and he has produced a manual which will be of very great value to the student. It is not fair to compare it with Cohnheim's book. Cohnheim was a pioneer in an almost unworked field and our modern teaching took its rise in his labours; his lectures remain as a monument to his originality and genius. At the present time a writer on general pathology must draw largely on the results of others, and a good student's manual must be mainly a judicious compilation, well balanced and critically edited. This work has been accomplished by the author in a very excellent manner, and the English student has now at his command a good and lucid summary of the main facts of experimental pathology presented within the reasonable compass of some 800 pages. The writer has, as he frankly admits, drawn freely upon Cohnheim's writings, and he has laid under contribution most of the important original work which has appeared in more recent times; in particular he admits his indebtedness to the various writers who have contributed to Clifford Allbutt's "System of Medicine." All parts of the book are naturally not equally good and it is not difficult to find fault here and there with individual statements. Thus on p. 63 both the anatomist and the practical physician will be surprised to read that "lesions of the tricuspid valve rarely produce any specific murmurs, partly by reason of the depth at which the valve is situated in the thorax and partly," &c., &c. The murmur of tricuspid regurgitation is a common one and the valve is more superficial than the mitral. Most bacteriologists will also learn with astonishment that staphylococcus pyogenes aureus is commonly present in the vegetations of simple endocarditis. It is not even the commonest organism in infective endocarditis. The pathology of the heart is, however, very well put from its physiological side and is soundly based upon experimental work. The author's own work on œdema is well known, and if he has treated this branch of the subject at somewhat undue length he may well stand excused on account of its interest and importance. This is perhaps one of the best sections in the book. The chapters on inflammation are full and clear and the chief objection to the author's concluding definition of that process is one which is common to all attempted definitions of inflammation—that it would convey to one ignorant of the subject no idea whatever of what inflammation is really like. The pathology of infection again is very well treated and there is a good criticism on the phagocyte theory of immunity. The pathology of fever is also excellently set forth. Space fails us to criticise in detail all the sections of the book, though certain omissions may be noticed. Thus under the theories of uræmia, we fail to find any reference to Bouchard's views, which, whatever opinion may be held as to their value, certainly merit discussion. No reference, again, is made to Cabot's book in the literature of blood diseases. It would, however, be unjust to insist upon such matters as these in face of the very signal service which Dr. Lazarus-Barlow has rendered in the production of this manual. He has done his work laboriously and conscientiously and has for the first time provided the student of pathology with a compendious and lucid exposition of the subject of experimental pathology—a subject which must more and more be recognised as lying at the very root of rational medical and surgical education.

LIBRARY TABLE.

A Practical Treatise on Sexual Disorders of the Male and Female. By ROBERT W. TAYLOR, A.M., M.D., Clinical Professor of Venereal Disease at the College of Physicians and Surgeons (Columbia College), New York; Surgeon to Bellevue Hospital, &c. With 73 Illustrations and 8 Plates in colour and monotone. London: Henry Kimpton. 1897. Pp. 451. Price 12*s.* net.—The branch of surgery with which this work deals is one about which very little is said in most text-books of surgery and yet its importance is by no means small, for whether we consider the frequency with which such cases present themselves or the amount of unhappiness which results from them it is very obvious that they are worthy of the most careful attention of the surgeon. Dr. Taylor deals in the first place with the anatomy and physiology of the male sexual apparatus and it is interesting to note that he is inclined to accept the results of the researches of Professor George S. Huntingdon, who asserts that the vesiculæ seminales never contain semen and that they do not act as places of storage of this fluid, but they provide a special form of mucus to dilute and carry on the semen. Impotence and sterility in the male are thoroughly considered and a chapter is devoted to the mental effects of sexual disorders. With regard to sterility in the male, the author thinks that probably in one case in six of unfruitful marriages this is the cause. The second half of the book deals with sexual disorders in the female. The final chapter treats of a peculiar new growth of the vulva, three examples of which Dr. Taylor has seen. He has already written on this condition in the *American Journal of the Medical Sciences.* In some respects it resembled a tertiary syphilitic condition, but potassium iodide seemed to have no effect upon it, and microscopically it appeared to be inflammatory. The volume is a trustworthy treatise on a difficult subject.

Transactions of the American Climatological Association for the Year 1896. Vol. XII. Containing Part II. of the Report of the Committee on Health Resorts. Philadelphia: Printed for the Association. 8vo. Pp. 293.—The American Climatological Association has not only for its object the study of climatology but also of hydro-therapeutics

and of the diseases of the respiratory and circulatory organs, and hence we find in this volume of its transactions papers on a few subjects that have but little to do with climatology. However, the greater number of the papers are concerned with the influence of climate on disease and they are well deserving of being printed. Perhaps the articles of most interest to medical men on this side of the Atlantic are those which deal with the climatic conditions of particular health resorts, and we may specially mention a paper on the Climate of Arizona. A valuable appendix contains the second instalment of a report of the committee upon health resorts; in it are given brief accounts of 50 such resorts, with analyses of the waters, if they possess medicinal springs.

International Clinics: A Quarterly of Clinical Lectures and Specially Prepared Articles on Treatment by Professors and Lecturers in the Leading Medical Colleges of the United States, Great Britain, Germany, Austria, France, and Canada. Edited by JUDSON DALAND, M.D. Philadelphia, Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania, &c.; J. MITCHELL BRUCE, M.D., F.R.C.P. Lond., Physician to, and Lecturer on Medicine at, Charing-cross Hospital; and DAVID W. FINLAY, M.D. Glasg., F.R.C.P. Lond., Professor of Practice of Medicine in the University of Aberdeen, &c. 1896-97 Series. London: Lewin and Co. Vol. i., pp. 344; vol. ii., pp. 359; vol. iii., pp. 349.—The value of clinical lectures is becoming more fully recognised, for they form a very useful adjunct to the accounts of diseases given in text-books. The form of the clinical lecture should differ greatly from that of a lecture in a systematic course of medicine or surgery, but, unfortunately, this difference is not always recognised. These volumes form a portion of a most useful publication appearing quarterly. Each number contains more than forty clinical lectures, which have been delivered by recognised authorities in the subjects to which they refer. The majority of the authors are American, but many are British, and not a few are French, German, and Swiss. By the sub-title of the work it will be seen that all departments of medicine and surgery are dealt with, and though the lectures are necessarily of unequal merit, yet we cannot say that there is one which does not deserve a place in the volumes. Plates and diagrams, though not numerous, exist in sufficient quantity to illustrate the lectures satisfactorily.

Die Behandlung der Syphilis nach den gegenwärtig üblichen Methoden. Für die ärztliche Praxis. Dargestellt von Dr. F. GRIMM, in Berlin. (*The Treatment of Syphilis by Modern Methods.* By Dr. F. GRIMM of Berlin.) Berlin: S. Karger. 1896. Pp. 103. Price 2*s.* 6*d.* net.—This work gives a fairly complete account of the various methods of treatment of syphilis which are in use at the present day. It is specially concerned with the treatment of the primary and secondary manifestations of the disease and the treatment of tertiary syphilis is considered rather more briefly. We think that the treatment of the congenital form of the disease might with advantage have been fuller. As might have been expected a large amount of space is devoted to the hypodermic method of the introduction of mercury into the system. Dr. Grimm points out that there are two hypodermic methods which differ in an important point: in one insoluble preparations are injected and in the other soluble salts of mercury are employed. The injection of insoluble preparations of mercury was introduced by Scarenzio in 1864, but it has almost entirely given place to the injection of soluble salts, if the hypodermic method is employed at all. A very brief account is given of the "blood-serum" treatment of syphilis and it cannot be said in the present stage of our knowledge of the subject that it deserves much consideration.

Stretcher Drill, Illustrated, including Hand, Seat, and Wagon Drill. By Surgeon-Major J. J. DE ZOUCHE MARSHALL, Hon. Assoc. of St. John of Jerusalem in England, Army Medical Reserve of Officers, 3rd V. R. East Surrey Regiment, &c. London: William Clowes and Sons, Limited. 1898.—The simple announcement of the title of this little book, which is published by permission of Her Majesty's Stationery Office, is sufficiently explanatory of its nature and object. It is well illustrated and the accompanying letterpress descriptions and directions are clearly and well given. The book should prove useful as a practical guide to volunteer surgeons and others and especially to such as are desirous of instructing regimental ambulance classes in stretcher drill as well as in First Aid. The best and indeed the only sure way of learning any drill, however, is, as pointed out by the author, to go through it in the ranks under a competent instructor.

Elementary Chemistry, Practical and Theoretical (First Year's Course). By T. A. CHEETHAM, F.C.S. London: Blackie and Sons. 1898. Price 1*s.* 6*d.*—This book is the companion of "Elementary Physics, Practical and Theoretical," which was reviewed in THE LANCET of June 25th, 1898. The author suggests a perfectly correct though somewhat laboured method of recording the weight of a substance; the treatment is otherwise very definite and concise.

Pocket Notes on the New British Pharmacopœia, 1898. Bristol: Ferris and Company. Pp. 123.—The alterations in strength, composition, or dose which the new Pharmacopœia requires to be substituted for those contained in its predecessor occupy about ninety pages of this little book. On an average there are about five formulæ on a page, extra space being allotted to the tinctura chloroformi et morphinæ composita, which differs very materially from the old tinctura chloroformi et morphinæ. The additions, omissions, and alterations in nomenclature, all of which are clearly shown, make up the rest of the book. As its name denotes it is of a shape and size convenient for the pocket.

The British Pharmacopœia, 1898: Alterations, Additions, and Omissions. Sixth edition. London: *Pharmaceutical Journal* Office. Pp. 48. Price 4*d.*—This pamphlet, which is a reprint from the *Pharmaceutical Journal*, gives the essential particulars relative to the preparations the names, composition, strengths, or doses of which have been altered in the new Pharmacopœia. Its arrangement is alphabetical, beginning with Acetum cantharidis and ending with Vinum Xericum, whereby prescribers will have no difficulty in finding the references which they may happen to require. In the case of several of the new extracts, as well as of tincture of opium, the processes of preparation and of standardising with a view to obtaining a finished product of definite chemical strength are described with much fulness. At the end there is a useful table showing the proportions in which spiritus rectificatus must be added to water in order that the mixture may contain a given percentage of absolute alcohol.

Pocket Guide to the British Pharmacopœia, 1898. By FRESHFIELD REYNOLDS.—In this concise summary, published by the author, a pharmaceutical chemist of Harrogate, the changes in the new Pharmacopœia which more particularly concern the prescriber are brought into the convenient compass of eight pages. Special attention is therefore directed to articles which have undergone important alterations of strength, such as the extract of Calabar bean, infusion of ergot, blistering fluid, together with several of the "spiritus" and tinctures. Practitioners will find these notes very easy for reference on account of the absence of details which are of merely pharmaceutical interest. A copy will be sent to any member of the medical profession on receipt of name and address and 1*d.* postage stamp.

THE LANCET.

LONDON: SATURDAY, JULY 2, 1898.

ON Tuesday night the House of Commons proceeded with the consideration of the Prisons Bill as amended by the Standing Committee. After discussions upon flogging and the treatment of treason-felony prisoners the House passed to the consideration of a subject certainly of deep interest to the whole country and one with which we are immediately concerned. The Home Secretary moved to omit from Clause 1 of the Bill the words "and one of them [i.e., the Prison Commissioners] shall be a medical man skilled in mental diseases." These words had been inserted by the Grand Committee but he did not think that the hands of the Secretary of State ought to be tied by having the appointment of a medical officer skilled in mental diseases made compulsory, though he desired to strengthen the medical element among the Commissioners. In the discussion which followed the Irish Members and many Radicals spoke against the Government, while the front Opposition bench eventually voted with them. A compromise was arrived at, the Home Secretary promising to insert a minute on the records of his office to the effect that it was desirable to appoint a medical Commissioner as well as medical inspectors. It is allowed on all hands that insanity is prevalent in prisons and in all probability the prison routine of the past has had a great deal to do with bringing this about. We cannot agree with those who submit that all crime is insanity, other than in the sense that it is a deviation from the normal. But the ordinary criminally minded man or woman is certainly of very low mental calibre and is mentally unstable, and this being so it is of the greatest consequence that among those appointed to supervise his, or her, treatment and punishment there should be some who have made a study of mental affections.

The present Prisons Bill has made one great step in the matter of prison reform, for as at present drafted it hands over the control of prisons to the House of Commons. But the Prison Commissioners will, we take it, be allowed a certain amount of latitude. Upon them will fall the duty of seeing that the decisions of the House with regard to various matters connected with prison discipline are carried out as they should be. For this purpose medical knowledge will be most valuable and we utterly fail to see the force of the objection of the Home Secretary to the words which he proposed to omit and which have been omitted by a majority of 97. These words were inserted by the Grand Committee and the Standing Committee on Law voted for their insertion by 25 votes to 8. We are far from agreeing with those Members who implied that the decisions of a Committee of the House of Commons should necessarily bind the House itself, but on a matter such as this, where it was allowed by the responsible Minister that increased medical representation was very desirable, it seems to us that th words in question might very well have been allowed to stand part of the clause. One speaker suggested that it was not due to the action of the Home Secretary but to the permanent officials of the Home Office—a view, however, dissented from by SIR MATTHEW WHITE RIDLEY, who took all the blame upon himself. We cannot acquiesce in the charge of unfairness which was brought against him by one Member. The Home Secretary fought the addition to the clause—i.e., the words now omitted—in the Grand Committee, was beaten there, and had every right to fight it again in the House. But in the wisdom or policy of this action we cannot agree. The appointment of a medical Commissioner is not one merely of expediency but of necessity, and, though the compromise arrived at is better than nothing, yet the omission of the words in dispute is a serious blot upon the Bill.

The whole debate was an excellent example of the curious affection which the House of Commons has for hair-splitting, a fact duly noted and commented upon by Mr. BALFOUR. Another point brought out is the dislike that this Government, and we might say every Government, has to saying "must." To our minds the very essence of Government is to say "must." Permissive Bills are never of any use. The Home Secretary argued that he did not want either his hands or those of his successor tied. But the whole object of a law is to tie someone's hands. Sir MATTHEW WHITE RIDLEY allows that a strengthening of the medical element is desirable and yet he omits the very clause in the Bill which provides for this reform. However, as he has pledged himself to place on record at the Home Office a minute to the effect that the medical element shall be represented among the Commissioners, a minute which, though not binding on future Home Secretaries, shall yet, in the words of Mr. ASQUITH, be a guide for them, it is possible that not much, if any, harm has been done.

IN THE LANCET of June 18th we called attention to the subject of the hospital equipment and the medical and sick transport arrangements provided for the troops at the battle of the Atbara, about which a series of questions had been recently put to the Under Secretary for War in the House of Commons. Mr. BRODRICK admitted, it will be remembered, that the litters used for the wounded were not provided with sun protectors in the shape of folding hoods and that no Roentgen ray apparatus had accompanied the field force, adding, however, that measures either had already been, or would be, taken to supply the deficiencies in both these respects. He pointed out at the same time the difficulties attending the adaptation of the Roentgen apparatus to field service and declared, on the authority of the senior medical officer, who had gone very carefully over the cases, that no instance had as a matter of fact occurred in which the apparatus would have been specially useful or would have been instrumental in saving a single life. As regards the other subjects of complaint the Under Secretary for War either refused to allow that there were any grounds for their existence or minimised their importance. He saw no reason for the appointment of any Parliamentary or other committee of inquiry. We said that although Mr. BRODRICK'S replies were on the whole satisfactory we should have been glad if he had expressed himself more definitely in respect of

the allegations which had been made regarding the severely economical scale on which our Egyptian campaigns had been hitherto conducted. We added that while quite ready to admit that it was not always possible to provide for every contingency occurring on field service, whatever was practicable should unquestionably be done, and that if for financial or military reasons this was not done the responsibility should not be allowed to rest with the medical branch of the service.

Judging from what has since been published Mr. BRODRICK'S explanatory statements in the House of Commons do not seem to be regarded as adequate and we consequently feel amply justified in the comments we made on the occasion in question. Nothing could have been better than the way in which the medical officers did their work at and after the battle of the Atbara, and we have been assured that there was, as a matter of fact, plenty of chloroform at the front. But even were it otherwise, we may safely assume that whatever shortcomings there might have been in respect of anæsthetics or of any other hospital stores they would have been attributable to the self-same cause which is continually *en évidence* in our campaigns—want of transport. The provision of sufficient transport means, of course, the expenditure of money and we may be pretty confident that if any branch of the service is to be squeezed in this respect it will not be the military but the medical branch of the service. We do not say, of course, that such was the case, but if stores and equipment required at the Atbara were at Wady Halfa, for example, they might as well have been at Cairo or in England. Instead of the necessary amount of transport being handed over to the medical department for its special use, to be disposed of in the best way to meet its requirements in the field, medical officers have never, so far as we can learn, had a free hand in this respect in any campaign which has yet taken place. Supposing the required amount of stores and equipment to be allowed and not cut down, there is nevertheless no assurance, as it seems to us, under the present system that they will be forthcoming at the times and places where they are most needed. The military operations in the Soudan against the KHALIFA have been for the benefit of civilisation and humanity; they have been designed and carried out with great skill and at a relatively small cost. The question is, however, whether this policy of cheapness has not been carried too far. The demands on a medical service in the field are becoming more and more severe and exacting, and the force of public opinion in this direction will increase rather than decrease as time goes on. In the coming expedition of the Anglo-Egyptian army to Khartoum the finance and military authorities must be prepared to meet the requirements of the medical service or in common fairness to that service to publicly accept the full responsibility of the position.

IN a recent article[1] we held that it was our duty as a profession to tell the State how it may prevent and control small-pox, but that it was the duty of the State itself to decide how the prophylaxis shall be applied. Every individual in the realm should be vaccinated and re-vaccinated and the State should use all reasonable legislative pressure towards this end, but we argued that the question of how far compulsion should be resorted to is one in which medical men are interested rather as units in the body politic than as a profession. By the narrow majority of 2 votes (26 to 24) the Grand Committee on Law has rejected Sir WALTER FOSTER'S amendment in favour of a conscience clause as regards primary vaccination. So far as the Committee is concerned the State has therefore decided that pressure to a certain extent — afterwards modified — may be exercised towards the vaccination of every child. Our views on this question have been sufficiently expressed since fresh legislation began to be talked of and we need not repeat them here. Looking, however, to the closeness of the division on the proposal for a conscience clause and to the fact that three out of four medical men as well as the solitary Royal Commissioner who is on the Committee supported the proposal, we venture to suggest to Mr. CHAPLIN that the decision with regard to penalties for primary vaccination need not necessarily be applied to any clause which may be introduced to provide for revaccination.

Logically, primary vaccination and revaccination should stand on the same footing, but the Bill is more or less illogical already, and logic, like law, is a good servant but may be a bad master. We assume here that the question of revaccination will be raised and that a clause will be proposed for adoption. It would be mere pettish folly on the part of any members of the Committee who believe in vaccination and revaccination but who have been in the minority on the subject of a conscience clause to withdraw now from their support of revaccination. It would be a shame that revaccination should not be voted on, and any clause for this purpose could have incorporated with it a proviso for the acceptance of a declaration of conscientious objection. To omit from the new law a section dealing with the systematic maintenance and encouragement of national revaccination would be a national blunder, but as the legislative requirement of revaccination would be a new one in this country, it might well be accompanied by that right of relief from penalty for refusal of compliance which was so nearly carried in the committee when primary vaccination was under consideration. Mr. CHAPLIN has said that if the new Act is not a success he will return to Parliament again and again for its improvement. With restricted penalties still possible in the case of primary vaccination, and with a conscience clause as to re-vaccination, it would soon be possible to learn by experience which of the two methods of inducement towards compliance with the law is the more successful and the less provocative of friction and difficulty. If it were to be found — and it would not surprise us to find — that even single penalties could be wisely dispensed with, then no body of men would more heartily welcome the abolition of fines than would the profession of medicine. Their attitude towards the Bill shows that their aim is not to have fines inflicted but to

[1] THE LANCET, May 21st, 1898, p. 1409.

have the children and the adults of the land protected against small-pox.

As a step in this direction we may note that on Tuesday last Sir W. PRIESTLEY carried an amendment, against the views of Mr. CHAPLIN, by 17 votes to 12, which would practically reduce the penalties to one. For by this amendment the Committee decided to waive a second prosecution for the same default until the child was of the age of five years, and that even then proceedings would be withheld provided the parent or guardian made a statutory declaration of his objection. This is not very far removed from the spirit of Sir W. FOSTER'S proposal, and if it were to become law it would be almost tantamount to the abolition of compulsion.

ON Tuesday last the London County Council rejected (that is what their action amounted to) by a majority of 2 to 1 the by-law submitted to them by their own committee as a means of dealing with the serious and growing nuisance of street noises in the metropolis, and made it clear that no regulation dealing efficiently with such a matter will ever receive the sanction of the present Council, the consideration of other by-laws dealing with important cognate subjects being at the same time necessarily postponed owing to there not being a sufficient number of councillors present. The by-law which was defeated on the initiative of Mr. STUART, M.P., was admittedly drawn with the concurrence and aid of the Home Office officials, who, as the controllers of the Metropolitan police, would have had a large share in the responsibility of enforcing it. It ran as follows: "No person shall in any street or public place, for the purpose of hawking, selling, or distributing any article, shout or make any loud noise in such a manner as to cause nuisance or annoyance to residents or passengers, or to persons occupying shops, warehouses or offices. Provided that this by-law shall not apply to costermongers or street hawkers, if and so long as by virtue of the Metropolitan Streets Amendment Act, 1867, they are exempted from the operation of Section 6 of the Metropolitan Streets Act, 1867."

This last sentence, by its somewhat cumbrous method of cross-reference, exempts licensed hawkers and makes it perfectly plain that the by-law was aimed not at costermongers who presumably ply their trade in places where their mode of advertising their wares gives no offence, but rather at the persons who yell the attractions offered by the newspapers they seek to sell, either in our busy streets in the afternoons or in our quieter neighbourhoods at night and on Sundays; and also perhaps at some of the irregular and irresponsible criers of coal and other vendibles, who try to trade in places where they are not wanted or expected and where consequently they have to shout to attract attention. To say nothing of those who are lying ill, we have frequently called attention to the positive danger to health to a man carrying on anxious, intellectual work or preoccupied with business cares, whether in his office or in the street, from the incessant irritation caused by the discordant yellings of these street nuisances, and we were prepared to welcome, in company with all decent citizens, a simple workable by-law for the removal of the evil. This the measure rejected by the London County Council seems to us to have been. The objections urged against it were many of them so paltry as to be almost beneath criticism. One reckless suggestion was summarily disposed of by Sir H. B. POLAND, Q.C., a very valuable alderman of the Council, who pointed out that the police-stations could not become filled with men and boys, as another member had suggested, because the procedure would be by summons and not by summary arrest of the offender, and this was by no means the only trivial insinuation of the supporters of Mr. STUART'S amendment. But one argument employed seems to us to strike at the root of all the independence and integrity of the London County Council. It was adduced by a member who is reported to have said that he knew nothing that would subject the Council to so much unpopularity as these by-laws, while another gentleman who supported him said that if the by-laws were passed the chairman of the committee which was responsible for them would be "the most unpopular man in East St. Pancras." We can understand that fear of incurring grave unpopularity in his district might secretly influence the vote of a particular member of any elective body, but we think that respect for his own good name should deter him from avowing it publicly to his fellows. That the possibility of the unpopularity of the body as a whole or of any member of it should be held up as a wholesome and sound argument and as a deterrent from the taking of any particular course of action by the whole body and that the advice so given should pass almost without challenge seems to us a serious matter. Had such an argument weighed with Parliament it might have delayed the Vaccination Acts, the Factory Acts, the Education Acts, and many other measures passed for the public good to the inconvenience and annoyance of many individuals.

That yelling is a necessity to street hawking is an absurdity to anyone who has an elementary knowledge of London. To take newspapers as an example, the regular better-class street-vendors of them—as, for instance, those outside the gateway of the Temple, at Charing-cross, or at Oxford-circus—never shout. The ear-piercing cry of "All the winners" is raised by small boys anxious, no doubt, properly to earn an honest copper, but who certainly have no right to do so at the risk of the peace of the community or to the pain of the sick and suffering; and we have no hesitation in saying that if Mr. STUART and his followers considered the acquirement or loss of votes when they rejected the by-law proposed to them, whether the votes were those of costermongers or of those interested in the cheap and rapid dissemination of betting and racing intelligence, they were actuated by motives unworthy of English municipal life. That they rejected a workable by-law framed for the public health and comfort we firmly believe.

THE thirty-first annual meeting of the Canadian Medical Association will be held in Laval University at Quebec on Aug. 17th, 18th, and 19th next. For all information application should be made to Mr. F. N. G. Starr, general secretary, 471, College-street, Toronto.

Annotations.

"Ne quid nimis."

THE FIVE-HUNDRED-AND-FIFTIETH ANNIVERSARY OF GONVILLE AND CAIUS COLLEGE, CAMBRIDGE.

AN interesting dinner was held at Gonville and Caius College last week to celebrate the five-hundred-and-fiftieth anniversary of the foundation of the College, and so many eminent medical men have received their education there that although the foundation is not a purely medical one in the least, its anniversaries must always have a peculiar interest for our profession. Five hundred and fifty years ago—to quote largely from an interesting statement made at the commemoration service by Dr. N. M. Ferrers, F.R.S., the distinguished Master—Edmund Gonville, the rector of Terrington, in Norfolk, obtained letters patent from Edward III. to found a hall in Cambridge to be called after his own name and to be dedicated "to the honour of the Annunciation of Blessed Mary the Virgin." Gonville Hall was East Anglian throughout, its revenues being derived from ecclesiastical benefices in Norfolk and Suffolk, and for upwards of 200 years it remained the educational centre of those counties. In 1557 the second founder appeared in the person of "that great and generous John Caius," by whose name the College is colloquially known, and again East Anglia supplied both the man and the money. John Caius was born at Norwich in 1510, was admitted into the College in 1529, and in 1533 was elected a Fellow. Six years later he left the College and after studying under Andreas Vesalius graduated in medicine at the University of Padua in 1541, whence he was admitted *ad eundem* to the Cambridge degree in medicine. On his return to England, learned and full of the fame which he enjoyed as friend and equal of the great continental scholars, he became a Fellow of the Royal College of Physicians of London, of which corporation some eight years later he was elected President. In 1557 Dr. John Caius, who had acquired great wealth by his professional practice, obtained from King Philip and Queen Mary the Charter of Foundation as well as of Confirmation by which he was made co-founder of Gonville and Caius College. He presented to the new foundation manors in Hertfordshire and Norfolk and lands and houses in Cambridgeshire. At his own charge he built two wings of the College building and likewise furnished the library with many books of great value. Over the new or joint foundation he placed Mr. Thomas Bacon, the then master of Gonville Hall, but on Mr. Bacon's death in 1559 he was himself "prevailed on by the unanimous request of the Fellows and the solicitation of the Vice-Chancellor and heads of the University to take into his own hands the government of the College." He accepted the post without stipend. In this station he lived and under him the College flourished for thirteen years and upwards, when he resigned the Mastership in 1573. Two months later he died and is now buried in the chapel of his great foundation. Gonville and Caius College may well be proud of its second founder, who was not only a profound scholar and a skilled and painstaking observer, but was also the most important medical author in England before Harvey. So that although the College has a great record in the schools in every direction—and it may be added that Caius men have been particularly successful this year both in classics and mathematics—the predominating influence of the name and fame of John Caius will probably continue to secure to his foundation a large number of the members of the Cambridge University Medical School. It is interesting to note that Dr. Caius is the only man who has ever ruled over a college of his own founding and called by his own name in Cambridge or, we believe, Oxford. The historic families of Sidney, Clare, and Pembroke have all founded colleges which bear their names, but in no case did the founder of these personally rule over the fortunes of the new college, being in two instances at least debarred by her sex if not by her inclination.

KISSING THE BOOK.

AT the Central Criminal Court on June 23rd Mr. Justice Grantham said that the testaments on which witnesses were sworn had been in use for a great many years and he thought that it was time that the proper authorities should supply new ones. No one, however, seemed to know upon whom this duty devolves. A copy of the Gospels can, we believe, be procured for a penny, so it ought not to be difficult to supply new copies, but we earnestly hope that when new ones are supplied advantage will be taken by the judges to point out that the Scotch form of oath is perfectly valid and should invariably be preferred. We need not again go into the arguments against the practice of "kissing the book," and we merely mention the circumstance because it seems to us a favourable opportunity of doing away with the practice altogether.

THE REPORT OF THE PETROLEUM COMMITTEE.

LAST week we ventured the opinion that it was premature to say definitely what decision would be precisely arrived at by the Petroleum Committee, although a good deal of confidence had been expressed in some authoritative quarters that Mr. Collings's report would be accepted with slight amendment. The march of events has proved this speculation to be wrong. It may be remembered that Mr. Collings proposed to deal with the construction of lamps, while Mr. Ure expressed the conviction that it was only by ensuring the supply of burning oil of a flash-point never below 100° F. that safety could be guaranteed. At their meeting last week the committee divided on this issue, with the net result that a majority of one was in favour of Mr. Ure's contention that a minimum limit of 100° F. should be placed upon oil intended for use in lamps. So far, therefore, as the findings of the Petroleum Committee are concerned the momentous question has been decided by one member. Fifteen members voted, the chairman assuming on a division a neutral attitude by not voting at all. It is doubtful whether this result will convince the Government that the conclusion is sufficiently decisive to demand the adoption of the drastic step which such a recommendation implies. One important point at any rate seems to us to have been overlooked. Is the construction of the millions of lamps now in use adapted to burn oil of a minimum flash-point of 100°F. Abel test? We have decided misgivings on this head and if we are right it is evident that the proposal to fix the flash-point at 100° F. will involve new lamps as well as new oil, whereas assuming that the committee had decided that the oil of 73°F. flash-point could be burnt safely in properly constructed lamps legislation would need only to be brought to bear in one direction instead of two. We fully realise the vexatiousness of the problem and the difficulty of suggesting and bringing to a successful issue a way out—that is, one which will be a means of protecting as far as is humanly possible the public from risk and disaster. We have approached the subject solely from the point of view of public protection; we are quite indifferent as to the direction that legislation may eventually take as long as it appears practicable and proves in actual effect to be a preventive measure shielding the public from a source of danger which has undoubtedly increased during

recent years. Our attitude is well known and we see no reason for changing it. We have gained practical evidence of the security afforded by properly constructed lamps. We believe the fixing of the flash-point of oil at 100° F. to be impracticable as a basis for legislation, while there are reasons for thinking that its adoption may convey a false sense of safety and lead to even greater carelessness and negligence than have hitherto prevailed. If our attitude should ultimately prove to be wrong we shall none the less welcome any alternative proposal, should it be followed by a happy issue, from whatever lines of reasoning it may have sprung. Let the flash-point be raised by all means if that will protect life and limb and if at the same time it will not engender other hardships in the every-day conduct of human affairs.

THE SMOKE NUISANCE.

LAST week we expressed disagreement with the judgment given by Sir James Vaughan in a case of smoke nuisance. The magistrate said that he was satisfied that the company summoned had done all in their power to mitigate the nuisance and he accordingly marked the summons "No conviction." A precisely similar line of defence, that is, that the nuisance was caused through the difficulty of getting smokeless or Welsh coal owing to the strike, was adopted at Westminster this week, but Mr. Sheil said: "That is no defence. The full penalty is £10. I will fine the defendants £5 and 23*s.* costs." That is precisely our view, which was expressed almost exactly in the same terms on page 1768 of our last issue.

DINNER OF THE EPIDEMIOLOGICAL SOCIETY.

A VERY successful dinner of this society was held on Friday, June 24th, in the Marble Saloon of the Grand Hotel, Trafalgar-square, the President, Professor Lane Notter, being in the chair. Amongst those present were Sir Walter Foster, M.P., Surgeon-Major-General James Jameson, C.B., Director-General of the Army Medical Department, Mr. Shirley Murphy, Dr. Franklin Parsons (President elect of the Epidemiological Society), Dr. Whitelegge, Her Majesty's Chief Inspector of Factories, Dr. Klein, F.R.S., Surgeon-Colonel Stevenson, A.M.D., Mr. Gough, Secretary of the Thames Conservancy Board, Dr. Blake, L.C.C., Dr. Newsholme, Dr. Sweeting, Dr. Hector Mackenzie, Dr. Washbourn, Dr. F. W. Andrewes, Fleet-Surgeon Theodore Preston, R.N., Brigade-Surgeon J. B. Scriven, and many others. The toast of "The Army and Navy" was proposed by Sir Walter Foster, M.P., who congratulated the Army Medical Department upon the reform which they had already obtained and insisted upon the paramount importance of unity of action in the medical profession where the welfare of any of its numerous branches was concerned. The toast was responded to by the Director-General of the Army Medical Department and by Fleet-Surgeon Theodore Preston, R.N. Dr. Whitelegge proposed the toast of "The Visitors" and, coupling it with the names of Dr. Blake of the Public Health Committee of the London County Council and Mr. Gough of the Thames Conservancy Board, drew attention to the great influence which both the London County Council and the Thames Conservancy Board must of necessity exercise upon the health of the metropolis. In the course of his reply to the toast, Mr. Gough gave a very interesting account of the work done by the Thames Conservancy, which he stated was the oldest authority for the prevention of water pollution, powers having been conferred upon it by the Legislature in 1866. These powers, however, being limited to the main stream and parts of tributaries, within three miles of the main stream were found insufficient and, as a result of a recommendation of Lord Balfour's Commission, the Conservators have now jurisdiction *re* pollution over a much wider area. Mr. Gough referred to the excellent results which had been obtained in the tideway by the efforts of the London County Council in the treatment of the metropolitan sewage, while above the western limits of the metropolis the Conservators have constantly at work a chief inspector, seven inspectors, and eight assistants, reports being received from these officers on every aggregation of houses in the area. Samples of water, which last year amounted to 1500, are constantly submitted to the Board's analyst, Mr. C. E. Groves, F.R.S., and it appears that the amount of organic impurity dissolved in the water immediately above the intakes is now only about two-thirds of that which it was prior to 1894, when increased powers were conferred upon the board. The toast of "The Epidemiological Society" was proposed by the President, who dwelt upon the work done by the society and urged the desirability of its keeping in the main to the scientific aspect of epidemiology. He announced amid much applause that it had been unanimously resolved to confer the first "Jenner Medal" upon Mr. William Henry Power, F.R.S., whose work was regarded as being a type of that which the society should seek to honour. Mr. Shirley Murphy, in proposing "The Chairman," thanked Professor Notter for the very valuable advice and guidance which he had afforded to the society during his term of office, and congratulated the council upon their selection of the first Jenner Medallist.

SANITATION VINDICATED.

WHEN the *tout à l'égout* system was first inaugurated in Paris its opponents were numerous and bigoted. It was absurd, they said, to expect that sewage could be purified by pouring it over land, and as for the notion that agricultural advantage would accrue it was simply visionary. Hygienists, like all would-be reformers, were blindly zealous, utterly unable to perceive defects in their precious bantling, and obstinately incapable of letting well alone. If allowed to proceed with this monstrous scheme they would end by creating a centre of infection which would eventually poison the entire city. Facts, however, are stubborn things, and the experiment at Gennevilliers has been so successful that the more reasonable among the early decriers have been converted. The sewage farm at Achères occupies as it were a peninsula formed by the winding Seine and covers about 2470 acres. Each half-year the quantity of sewage dealt with amounts to 20,000,000 cubic metres, but so perfectly is the work done that in spite of this enormous deluge there is no local nuisance whatever and the neighbourhood is remarkably healthy. The great project for purifying Paris has only been partially executed, but even though it were as complete as the projectors desire a minority of detractors would doubtless still raise their voices in depreciation. Notwithstanding the immense benefit conferred on Paris by the actually existing drains there are not wanting people who stigmatise them as so many elongated cesspits in which the movement is so slow that it takes the sewage two or three weeks to reach Clichy. As a writer in *La France* lately put it: "The circulation of the noxious matter is so languid that viscous fermentable deposits must necessarily take place to an extent which cannot but be in the highest degree dangerous to the public health." As usual, the anti-hygienists first beg the question and then triumphantly proclaim the logical conclusion. But, as already said, facts are stubborn things, and M. Bechmann, and M. Launay, the manager and chief engineer of the sewage works, have been fortunately able to demonstrate the unsoundness of their opponents' arguments by means of an object lesson as striking as it is decisive. During the Easter fêtes the streets of Paris were thickly strewn with *confetti*, just as though a violent storm of indissoluble

hailstones had been raging. The sweeping of the main boulevards began next day at three o'clock in the morning, and before eleven o'clock in the forenoon the *confetti* commenced to put in an appearance at Clichy. By midday the fields at Achères were covered with them. Instead of three weeks the transit occupied about eight hours, the distance measured from the Austerlitz bridge being a little over five miles. As the writer of an article on the subject in a Parisian medical paper remarks, "This original demonstration seems to be decisive."[1]

THE CRYPT OF ST. GEORGE THE MARTYR.

THE Home Secretary, upon the report made to him by Dr. Hoffman, Inspector of Burial Grounds, as to the condition of this crypt, has, we are very glad to announce, ordered the Vestry to remove the bodies which are lying there. At a meeting of the vestry of St. George's, Southwark, held subsequently to the receipt of the official direction from the Home Office, a prolonged and heated debate terminated in the passing of a resolution with one dissentient voice only to the effect that "the vestry as the elected representative of the parishioners of St. George the Martyr, Southwark, regret the action taken by the Home Secretary with regard to the crypt without first giving the sanitary authority of the district an opportunity of being heard, and they now request that a deputation of the vestry on the subject should be received by the Secretary of State." We certainly should like to hear what arguments the vestry can adduce to prove that it is for the good of the community over whose interests they have been chosen to preside that the crypt under the church of St. George the Martyr should remain full of corpses, but probably we never shall hear them, as it is unlikely that the Home Secretary will receive the deputation.

NOMENCLATURE OF NOTIFIABLE DISEASES.

THE vestry of St. Marylebone has memorialised the London County Council for the inclusion among the notifiable diseases of metritis and peritonitis following labour, and of puerperal pyæmia, septicæmia, and sapræmia, alleging that by employing these terms many medical men evade the notification as puerperal fever of cases which would otherwise be described as such and escape the discredit which would attach to the occurrence of such unfortunate accidents in their practice, though it is evident that if all were like-minded there would be nothing left to notify under this head and the purpose of the Act—that of calling the attention of the medical officer of health of the district to the existence in a house of a most "dangerous infectious disease" capable of being conveyed by the medical attendant or nurse to other parturient women and demanding special precautions to prevent its spread—would be completely defeated. The expression "puerperal fever," though from a strictly scientific standpoint inaccurate and, perhaps, indefensible, presents the practical advantage of being generally understood and, though vague, of being sufficiently comprehensive to cover every form of blood-poisoning, whether derived from internal or external sources, occurring during or subsequently to parturition and all in the highest degree infective. Metritis and peritonitis arising under these circumstances being always of septic origin, the distinction between sapræmia and septicæmia being, so to say, academic, and "pyæmia," so-called, being but septicæmia which has led to embolism, thrombosis, and the formation of abscesses and necrosis, "puerperal septicæmia" would seem to be the most appropriate as a general designation, but, as we have said, "puerperal fever" is after all the best as being intelligible to the public. This question is, however, really only part of a larger one, and the same practical considerations are applicable to the nomenclature of other infectious diseases, notably so to the infective sore-throats, pharyngeal and laryngeal, comprehended under the appellations of "diphtheria," "diphtheritic sore-throats," "croup," and other semi-scientific or popular expressions. The obvious and only practicable means of precluding evasions of the Act is to be found in an amendment of the schedule by the addition of synonyms and definitions both inclusive and exclusive, as for example—

Cholera.—Asiatic (not the so-called English, cholera nostras, infantum, and choleraic diarrhœa, cholerine, &c.).

Diphtheria.—Pharyngeal, laryngeal, nasal, &c. (including so-called diphtheritic and infectious sore-throats, membranous and infectious croup, but not catarrhal, non-infectious, and "spasmodic" croup).

Puerperal fever (including all septic, febrile, and inflammatory sequelæ or complications of, and consequent on, parturition).

[1] Le Progrès Médical, May 21st, 1898.

GLOSSITIS IN TYPHOID FEVER.

IN the *Johns Hopkins Bulletin*, May, 1898, Dr. Thomas McCrae has described a case of this very rare complication which occurred in Dr. Osler's clinic. A man, aged twenty-seven, was admitted for a mild attack of typhoid fever from which he made a complete recovery. He was discharged after his temperature had been normal for 22 days. He was readmitted in 4 days complaining of pain in the throat, soreness, and swelling of the tongue, which had followed a chill on the previous day. The temperature was 104·2° F., the pulse was 100, the face was flushed, the neck was full and swollen at the angles of the jaws. The mouth presented a striking picture. The tongue was much swollen and protruded between the teeth, preventing the closure of the mouth; it was red, indurated, and tender. There were profuse salivation and dysphagia. The swelling gradually subsided and passed away in 3 days. The patient had a typical relapse of typhoid fever, pyrexia, rose spots, and enlarged spleen, which ran its course in 2 weeks. Cultures made from punctures of the tongue were negative. The punctures seemed to help to reduce the swelling.

THE LONDON SOCIETY OF MASTER PLUMBERS.

THE medical profession cannot fail to recognise the importance of craft associations which are formed with a view of upholding the dignity and position of the professions concerned, and more particularly must this be so when the trade or profession happens to be one upon the work of which the sanitary condition of our towns and villages very largely depends. This is so with the plumbing fraternity, and the London Society of Master Plumbers is an association with commendable objects aiming to secure for the plumber that status which his skill should demand and for the public an efficient and reliable workman. No class, perhaps, has been so roundly abused as the plumber and in many instances it is to be feared that this abuse was justified. The fact is, the merest dabbler in lead work who could make some sort of a joint or stop a leak called himself a plumber, though he was quite without any training, much less qualification, so to practise. Much mischief has been done in this way by the public themselves by ignoring the extreme importance of thorough work, but fortunately for the country there has recently sprung up a strong feeling that in the interests of the sanitary condition of our houses a system should be instituted which should offer some security that all sanitary arrangements may be placed in the hands of competent men. As is well known, the Worshipful Company of Plumbers is doing excellent work in this direction and during the last four years a practical association called the London Society of

Master Plumbers has been extending similar good offices throughout the country. The association numbers 1000 members and at the annual dinner held at the Holborn Restaurant on June 28th the secretary announced a decided increase in the membership. Everyone with any concern at all for sound sanitary work will wish the association every possible success and none can doubt the worthiness and excellence of its purposes.

THE JENNER MEMORIAL.

THE Jubilee year necessarily interrupted this movement and many others. The committee charged with the duty of promoting a work of national utility in honour of Edward Jenner in connexion with the British Institute of Preventive Medicine, to be distinguished by Jenner's name and devoted to researches on the lines which he initiated, is now at work again. We must all feel anxious for its success. There is every reason why Jenner's fame should be reaffirmed by every intelligent man and woman who values life and researches into the subtle means by which epidemics of all sorts can be as effectually checkmated as Jenner's discovery checkmated small-pox. It should be clearly recognised that Jenner's fame is in no danger. "The civilised world" has taken that into its care. It is the national reputation of Englishmen for common sense and for reverence for their best teachers that is at stake. It will be a bitter reflection for them one of these days to perceive that other nations guard the fame of England's great son and enjoy the exemption from small-pox which we shall lose proportionately as we dishonour him.

TOTAL EXTIRPATION OF THE STOMACH WITH ŒSOPHAGO-ENTEROSTOMY.

IN THE LANCET of Jan. 15th, 1898, we published Dr. C. Schlatter's case—the first in which this operation has been performed. Some cases had been previously recorded as extirpation of the stomach but they were only partial resections. In the *Boston Medical and Surgical Journal*, May 5th, 1898, Dr. C. Brigham has published a second case. The patient was a woman, aged sixty-six years, who had suffered from pain in the stomach for a year and from vomiting of solid food for two months. On a liquid diet she was able to keep to her usual weight, 135 lb., and she was remarkably healthy. There were hardness and tenderness in the pyloric region. The operation performed was not the same as in the first case. When the stomach had been removed Dr. Brigham found that the ends of the œsophagus and duodenum could be brought together without undue tension. As the pulse had become weak from the length of the operation they were united by the Murphy button (œsophago-duodenostomy). In the first case, on the contrary, Dr. Schlatter could only bring the ends together with difficulty; he therefore united the œsophagus laterally to the intestine about 12 in. below the duodeno-jejunal fold (œsophago-jejunostomy). In Dr. Brigham's case the growth was at the pyloric extremity and extended over more than half the stomach. The pyloric orifice was so reduced that only a sound could be introduced. The patient made a good recovery. Water was administered by the mouth on the day after the operation, and other fluids were then given. Deglutition was at times painful. On the eighteenth day solid food was given. At the time of the last report (7 weeks after operation) the patient was eating well, gaining in weight, and was able to walk. Dr. Brigham attributes the occasional dysphagia to the Murphy button, which he thinks had better be dispensed with if possible. At no time was undigested food passed in the motions, which exactly agrees with Dr. Schlatter's observations. These cases therefore confirm what has already been shown by experiments on animals and by observations on certain patients in whom secretion of gastric juice was deficient or absent, that digestion may be completed without the aid of the stomach. Dr. Brigham seems to have had an ideal subject for operation in respect to her general condition. This preservation of health and, above all, of weight by a patient with advanced cancer of the stomach is exceptional.

QUACKS.

ON June 23rd Henry Thomas Kirk Richards was sentenced at the Central Criminal Court to three years' penal servitude for obtaining money by fraud from people in different parts of the country by advertising an inhaler to cure deafness and medical pills to cure female ailments. The judge said that it was impossible to conceive what harm prisoner might do to persons whom he supplied with his quack remedies. We heartily congratulate the Common Serjeant on his dictum; but we desire to know why Munyon, Mother Siegel, Warner, Madame Frain, and all the other advertising quacks should go scot free. Still more, why should "Dr. Bell" and the various "Reverends" be allowed to deceive persons, even though fools, without being punished? If Richards alone is punished it will be unfair. We fear, from the reports of the trial in the daily press, that Richards's illegality technically consisted in not as a rule sending his remedies. This, we think, is a point in his favour, but apparently he sometimes did send them, or the Common Serjeant would not have spoken as he is reported to have done.

THE RED CROSS SOCIETY AND THE SOUDAN CAMPAIGN.

THE refusal to allow the English Red Cross Society to participate in the Nile expedition raises the question as to the position which that society occupies. It may be urged that the medical department of an army should suffice for the need of that army. This, indeed, is the position taken up by the Sirdar and by Lord Cromer. The latter, in his answer to Lord Wantage, the chairman of the English Red Cross Society, says that "very ample arrangements have been made for the sick and wounded and that to accept the offer would involve heavy call on transport beyond that for which calculation is made. This would necessitate diminishing the number of fighting men, which would be very considerable. We are, therefore, unable to accept." Lord Wantage, in reply to this refusal, explains that in 1884–85 two steamers were fully equipped by the society for service on the Nile and an additional steamer was lent by an English gentleman for transport purposes on the Red Sea. The Red Cross Society spent on that occasion £34,000 and comforts and luxuries were supplied which, it is claimed, have never been so fully provided by the army authorities. The position taken up by the Red Cross Society is that it increases the amount of aid which the regulations of the army allow, gives greater luxuries to the sick and wounded, and all this is done without augmenting the burdens of the taxpayer. The Red Cross Society affords the benevolent an opportunity of helping to mitigate the horrors of war. So far the Red Cross Society has worked in harmony with the authorities of the army, but now, for the first time, its services have been refused. It is true that on this occasion distance and difficulties of transport are exceptionally great, but a vast colonial empire must ever face such obstacles. Again, if the Red Cross Society is to render practical service it should lose no chance of acquiring practical experience. Far from seeking to burden the military authorities the Red Cross Society pays its own expenses and provides its own ships and means of transport. Presumably, however, there are some things which it cannot provide. It cannot increase the

limited rolling-stock for the railway lines laid down in the desert, nor can it supply the military escort that may be necessary to protect its ambulances against the raids of the Dervishes. Perhaps, therefore, there may be substantial reasons for refusing the proffered aid on this occasion, but if so it should be clearly understood and stated that this is altogether an exceptional case. Otherwise, what is the use of the Red Cross Society? In another column some details are given of the great services rendered by the Spanish Red Cross Society in Cuba and elsewhere. What a poor country like Spain has been able to accomplish the wealthy British nation should do on a much larger scale and it is quite easy to understand the disappointment which is now felt by the members of the English Red Cross Society. If it is really impossible to accept their services no pains should be spared to render it evident that there is no desire to discourage their generous and humanitarian efforts.

INSANITARY HOUSE PROPERTY IN HONG-KONG.

IN general the greater the sub-division of a Chinese tenement house the larger the revenue it will produce, but in Hong-Kong it is now proposed to place restrictions on excessive sub-division. The Insanitary Properties Commission have presented a report from the abstract of which, published in the *Hong-Kong Weekly Press*, it appears that all five commissioners are agreed that in houses fronting streets less than 15 ft. in width no cubicles should be allowed on the ground floors; three are of opinion that in such houses no cubicles at all should be allowed and two are of opinion that in houses fronting on lanes and streets of over 15 ft. no cubicles should be allowed on the ground floor without the permission of the Sanitary Board. It is also recommended that an open space of not less than 40 square feet should be provided at the rear of all houses, even back-to-back houses. At the meeting of the Hong-Kong Sanitary Board held on May 6th, the principal civil medical officer (Dr. J. M. Atkinson) presiding, arrangements were made for granting compensation to the owners or occupiers of a number of insanitary and illegal cubicles and cocklofts which had been destroyed.

CONGENITAL OBSTRUCTION OF THE LARYNX.

AN increasing number of observations tend to show that congenital obstruction of the larynx is neither so rare a disease of childhood nor of necessity so dangerous as might be supposed. The clinical and pathological conditions accurately described by Dr. D. B. Lees in the Transactions of the Pathological Society of London of 1883 appear to be fairly constant. His observations have since been confirmed by the experience of others, for a brief *résumé* of which we cannot do better than refer our readers to the interesting paper published in THE LANCET of Sept. 11th, 1897, by Dr. G. A. Sutherland and Dr. H. Lambert Lack. The subject has again been recently discussed in the *Journal de Clinique et de Thérapeutique Infantiles* by Dr. G. Variot, who records a case. The patient was a child, aged twenty-two months. The usual symptoms were present, including croaking inspiration, much less noticeable during sleep but becoming well marked on excitement and associated with clear vocal utterance. This child died from broncho-pneumonia soon after she came under treatment. A post-mortem examination showed the epiglottis characteristically folded together and the ary-epiglottidean folds in contact with each other. The vocal cords were normal. The treatment of such cases must naturally depend upon the view which is taken as to their causation and their prognosis. Dr. Variot is unable in face of the anatomical conditions present to agree with those who regard the respiratory difficulty as purely spasmodic, and he even goes so far as to suggest an operation for the partial resection of the obstructing folds of membrane in cases where an accurate laryngoscopic diagnosis has been arrived at. In this connexion it is noteworthy that Dr. Lees and also Dr. Sutherland and Dr. Lack have recorded a not uncommon tendency towards spontaneous disappearance of the stridor. This result is attained under favourable conditions by the end of the second year or even before then. It is also remarkable that the improvement is associated with persistence of the local constriction. Such facts as these may naturally be expected to qualify the urgent necessity of operative interference in this class of cases, at all events until time has been allowed for some enlargement in the size of the infantile larynx. In the meantime every care must of course be taken to ensure good general nutrition, to prevent the risks of laryngitis, bronchitis, and laryngeal spasm, to deal promptly with any surgical emergency arising out of these, and thus to afford nature all possible help in her curative efforts.

THE VALUE OF THE CHRONOLOGICAL SUMMARY.

THE chronological summary of Chicago mortality from 1851 to date, first published by the Commissioner of Health in his second annual report—that for 1894—is developing new uses. Believing that surgical intervention must have reduced the mortality from cancer of the uterus of late years, Dr. Anson L. Clark, Dean of the Bennett Medical College, recently applied to the Department for the data necessary to test his belief. The following facts and figures compiled from the summary were promptly furnished him. Cancer deaths were first reported in Chicago by organs or parts in 1867; prior to that year only the annual total of all deaths from cancer are on record. The reported number of all deaths from cancer and of deaths from cancer of the uterus are here given by years since that date—the year 1879 being omitted from the table because there is an obvious error in the printed report of that year, only four deaths from cancer of the uterus being reported out of a total of 176 from all cancer. It will be seen that the proportion of deaths from uterine cancer to that from all cases of cancer has diminished in each decennium, the percentages being 21·2, 19·4, and 16·0.

Years.	All cancer.	Uterine cancer.	Years.	All cancer.	Uterine cancer.	Years.	All cancer.	Uterine cancer.
1867	45	9	1877	130	28	1888	361	73
1868	82	18	1878	177	48	1889	379	59
1869	63	16	1880	163	33	1890	461	81
1870	87	20	1881	217	31	1891	545	85
1871	68	11	1882	220	45	1892	539	94
1872	75	13	1883	232	42	1893	609	94
1873	107	30	1884	265	45	1894	639	111
1874	109	19	1885	249	50	1895	682	113
1875	122	28	1886	230	56	1896	734	95
1876	122	33	1887	301	47	1897	742	108
10-year totals.	880	197		2184	425		5691	913

THE ASSOCIATION OF BRITISH POSTAL MEDICAL OFFICERS.

THIS association held its annual dinner at the Hôtel Métropole on June 23rd, Dr. Henry Fitzgibbon, President, being in the chair. Members of the association from all parts of the kingdom were present, besides important guests, including Sir Walter Foster, M.P., Major-General Hailes, Sir Robert Hunter (solicitor to Her Majesty's Post Office), Sir W. H. Wills, Bart., M.P., Mr. H. Osborne Harley,

Postmaster of Manchester, Sir William Mac Cormac, Sir Thomas Roe, Sir Hugh Gilzean Reid, Mr. Edmund Owen, Dr. W. Christopher Arnison, Sir Dyce Duckworth, and Mr. Ebenezer Davies, J.P. The association seems in a healthy and prosperous way and alive to the advantages of organisation, though it was modest in the assertion of either its grievances or its wants. One of the features of the evening was a quotation by the chairman in proposing the health of Her Majesty the Queen, of words which he attributed to Nicholas Rowe and which he rightly thought most happily prophetic and expressive of the great and gentle rule of Queen Victoria. They were as follows:—

> Of Royal race a British Queen shall rise,
> Great, gracious, pious, fortunate, and wise.
> To distant lands she shall extend her fame
> And leave to latter times a mighty name.
> Tyrants shall fall and faithless kings shall bleed,
> And groaning nations by her arms be freed.
> But, chief, this happy land her care shall prove
> And find from her a more than mother's love.
> From hostile rage she shall preserve it free,
> Safe in the compass of her ambient sea.
> Though famed her arms in many a cruel fight,
> Yet most in peaceful arts she shall delight,
> And *her* chief glory shall be to unite.
> Picts, Saxons, Angles shall no more be known,
> But Britons be the noble name alone.
> With joy their ancient hate they shall forego,
> While Discord hides her baleful head below.
> Mercy and Truth and Right she shall maintain
> And every virtue crowd to grace her reign.
> Auspicious Heaven on all her days shall smile
> And with eternal Union bless her British Isle.

THE SANITARY INSTITUTE: THE SIXTEENTH CONGRESS.

THE preliminary programme of the Sixteenth Congress of the Sanitary Institute, to be held in Birmingham under the presidency of Sir Joseph Fayrer from Sept. 27th to Oct. 1st, has now been issued. Dr. Christopher Childs, M.A., D.P.H., will deliver the lecture to the meeting in plenary Congress, and Dr. Alexander Hill, M.A., J.P., Master of Downing College and Vice-Chancellor of Cambridge University, will deliver the Popular Lecture. The Congress will include three sections, meeting for two days each and dealing with (1) Sanitary Science and Preventive Medicine, presided over by Dr. Alfred Hill of Birmingham; (2) Engineering and Architecture, presided over by Mr. W. Henman, F.R.I.B.A.; (3) Physics, Chemistry, and Biology, presided over by Dr. Sims Woodhead. Five special conferences will also be held: (1) Municipal Representatives, presided over by Alderman W. Cook, Chairman of the Health Committee of the Birmingham City Council; (2) Medical Officers of Health, presided over by Dr. John C. McVail, Medical Officer of Health of Glasgow; (3) Municipal and County Engineers, presided over by Mr. T. de Courcy Meade, M.Inst.C.E.; (4) Sanitary Inspectors, presided over by Mr. W. W. West, Chief Sanitary Inspector, Walthamstow; and (5) Domestic Hygiene, presided over by Mrs. C. G. Beale, the Lady Mayoress of Birmingham.

A COLLEGE FOR MEDICAL MISSIONARIES.

ON June 22nd a small committee, comprising the Bishop of Bristol, the Bishop of Wakefield, the Earl of Stamford, Sir William Paget Bowman, and several members of the medical profession, met at the house of Dr. Symes Thompson, Provost of the Guild of St. Luke, to discuss the scheme of founding a residential college in London where English Churchmen who intend to act as medical missionaries could reside while pursuing their professional education at one or other of the London medical schools. The scheme has long been under the consideration of the Guild of St. Luke and the meeting was convened in order to obtain an expression of opinion on the part of the dignitaries of the Church and some of the leaders of the profession as to its utility and the best mode of carrying it into effect. The proposed College will be controlled by the Council of the Guild of St. Luke and under the immediate management of two officers — a principal (who will be a medical man) and a chaplain (who will be a clergyman of the Church of England). They will assist and guide the students. When necessary the scholars will receive pecuniary aid from the College funds. It is intended that the students of the College shall become fully-qualified practitioners before taking up missionary work and shall acquire special knowledge of tropical diseases and sanitary science. While they will be missionaries they will not be in holy orders. The meeting was cordially in favour of the scheme and the opinion was generally expressed that the time had come for vigorous action. Various details were discussed and it was determined that strenuous efforts should be made to raise the necessary funds. Many letters expressing approval were read, but as the project has evoked so much sympathy it is impossible to give a list of the names of the writers. We may however mention among the supporters of the scheme the Archbishop of Canterbury, the Archbishop of York, the Bishop of London, the Bishop of Rochester, the Bishop of Bristol, the Bishop of Wakefield, Sir Henry Acland, Sir William Broadbent, Sir Joseph Fayrer, Sir Dyce Duckworth, and many other well-known physicians and surgeons.

THE PECULIAR PEOPLE.

AT the Old Bailey recently Mr. Justice Darling tried one of those curious cases which occur occasionally in which members of the sect calling themselves the Peculiar People find themselves the object of prosecutions which to them doubtless seem to be mere persecution. In this particular instance the accused had suffered his child to die from pneumonia rather than call in medical aid to supplement the anointing with oil and laying on of hands performed by an elder of his church. He was convicted of manslaughter and received no punishment beyond being bound over to come up for judgment when called upon. It may be that his lordship thought that the fear of the enforcement of this penalty would deter him from allowing another child's life to be sacrificed to his doubtless sincere convictions; but we are inclined to doubt the correctness of such a view when we consider the evidence given by the prisoner himself before the coroner and read over during his trial at the Central Criminal Court. He then said that he had some years ago lost another child who had died *without medical aid being summoned and on whom no inquest was held.* The Peculiar People show no tendency to be untruthful, so this statement is probably perfectly true, but it may be asked how in such a case the child came to be buried without inquiry, whether a certificate of the cause of death was given, and if so by whom, and why? We also wonder whether Mr. Justice Darling had this previous death in his mind when he passed sentence.

THE CHESTERFIELD HOSPITAL AND MEDICAL CASES.

IN another column will be found a letter from Dr. John Rose upon this important question. The matter as it stands is briefly thus. Chesterfield and district contain a population of 145,000. There is no provision for the gratuitous treatment of medical as opposed to surgical cases except the workhouse infirmary. The Chesterfield Hospital contains room for 60 ordinary beds, but on an emergency—e.g., a bad colliery accident—these 60 beds can be increased to 84. The average number of beds occupied is 30, so that 30 ordinary beds and 54 emergency beds are empty. The advocates of admission for medical cases submit that the 30 unoccupied beds might be used for medical cases. The

governors of the hospital, however, say that the hospital constitution forbids the admission of medical cases and they cannot break the rules. But they have already broken one of them (Rule 2), which runs as follows: "The hospital shall be open to receive only those persons requiring surgical treatment. Cases of disease or sickness in any form and chronic cases shall be excluded." This definition would at once exclude all cases such as tuberculous diseases of joints, all tumours, and, in fact, only cases of injury could be treated. And yet other cases than injuries have been treated. It being apparently impossible to get medical cases admitted to the hospital, efforts have been made to build a new medical hospital. At present all medical cases have to be sent to either Sheffield or Derby. In our issue of May 15th, 1897, we commented upon the proposal to erect a drill-hall as a Jubilee memorial at Chesterfield, when it was decided that any surplus should be devoted to forming the nucleus of a fund for a medical hospital. We do not know whether there was a surplus or not, but the medical hospital is still *in nubibus*. To our minds the building of a separate hospital involves a waste of time and energy: the two classes of cases had much better be treated under one roof; but provision for the care of those suffering from, say, pneumonia, bronchitis, or rheumatic fever, or even enteric fever, must be made without delay if Chesterfield desires to preserve the reputation of the North for hard-headed common sense.

THE REPORT OF THE METROPOLITAN ASYLUMS BOARD.

THE annual report of the Metropolitan Asylums Board for the year ended March 25th, 1898, contains a new feature of great interest—namely, an account of the steps taken by the Board to provide for certain classes of children the care of whom had hitherto devolved upon boards of guardians. Such are (*a*) those suffering from ophthalmia or other contagious diseases of the eye; (*b*) those suffering from contagious diseases of the skin; (*c*) those requiring special treatment during convalescence; (*d*) feeble-minded and defective children; (*e*) those ordered by a magistrate to be sent to an industrial school or asylum. For class (*a*) sites have been acquired near Brentwood and at Swanley for the erection of suitable schools. Provision for class (*b*) is still under consideration. Class (*d*) is to be provided for by cottage homes which are to be rented in the vicinity of the special schools provided by the London School Board. About 60 children will be provided for in the first instance. With regard to infectious diseases, the cases of diphtheria admitted to the hospitals was for 1897 6592, an increase over the figures for 1896 of 1358. The number of notifications, however, for 1897 was less by 559 than the number of notifications in 1896. It is fair therefore to assume that the prejudice formerly felt with regard to removing patients to hospital is dying out. The percentage mortality of this disease was only 17·7 during 1897. In 1894 it was 29·3. This marked diminution in fatality coincides with the spread of the use of antitoxin. The new Park Hospital was formally opened and the Board has acquired a site upon the Thames Embankment for the erection of new offices.

PSEUDOBULBAR PARALYSIS WITH DIPLEGIA IN A CHILD.

AT the Verein für Psychiatrie und Neurologie in Vienna[1] in November of last year Dr. von Sölder showed a curious case. The patient was a child, aged nine years, whose birth was normal and at full time, and who, during the first five years of her life was healthy both in mind and body. In her sixth year she began to have difficulty in walking, the result apparently of some defect in the right leg and her speech was also interfered with. Later there was weakness of the right arm and in the following year of the left leg, and about this time there was interference with the act of mastication. For more than a year before the time at which the patient was shown there had been difficulty in using the left arm and a little also in swallowing. The gait was now spastic with left talipes equinovarus, and pronation of the right foot. There were lordosis and unsteadiness, and during walking some athetotic movements of the upper extremities and of the lower part of the face—the latter movements being also present in some degree during rest. There was great weakness of the arms and marked spasticity existed in the legs. The knee-jerks were active, the right more so than the left. The speech was bulbar in character, almost unintelligible, and the orbicularis oris and the masticatory muscles were paretic. The act of swallowing was itself apparently not much interfered with and there were no electrical changes in the facial muscles. Dr. von Sölder regarded the case as one of cerebral affection, but the late onset and the slow development of the condition are both noteworthy.

[1] Neurologisches Centralblatt, June 15th, 1898, p. 573.

THE RÔLE AND ETHICS OF MUSIC.

IN NO better way can a nation express its gladness than in music and, besides, a well-conducted performance of the choicest excerpts from the great masters is a delight to all concerned and of distinct benefit as a factor in mental recreation. Viewed in this light, the Grand Festival Concert held at the Crystal Palace on June 25th in honour of the sixtieth anniversary of the coronation of Her Majesty the Queen-Empress was an unqualified success and highly appreciated by an audience of over 22,000 persons. Such could hardly have failed to be the case in view of the character of the programme provided and of the promised appearance of such excellent soloists as Madame Adelina Patti, Miss Clara Butt, Mr. Edward Lloyd, and Mr. Santley. The chorus numbered 3000 voices, consisting of the London contingent of the Handel Festival choir and an orchestra of 500 performers. We welcome events of this kind and on this scale—a scale which cannot be less if such works as the "Hailstone Chorus," from Handel's *Israel in Egypt*, or the "Dies Iræ" from Berlioz' *Grand Requiem* are to approach anything like that completeness which the respective composers meant to convey; and it is gratifying to learn from the experience of these occasions that the public, as evidenced by an expanding attendance, are evincing more and more a taste for that class of music which kindles the noblest feelings and fosters the healthiest aspirations in the human mind. This fact points to a wholesome desire for mental rest engendered by the ever-increasing pace and demands of modern existence, and the music-providing section in our midst deserve every encouragement at the hands of the public to persevere in thus ministering to this need. Music is an influence for good, and as Auerbach has said, "Music washes away from the soul the dust of every-day life," and the increasing demand for its enjoyment as shown at our great public performances is a distinct and sure indication of the healthy and moral progress of the nation.

SIR FRANCIS SEYMOUR HADEN will preside at the twentieth annual meeting of the Church of England Burial, Funeral, and Mourning Reform Association to be held at 32, Wimpole-street, on Wednesday, July 6th. Among other resolutions will be one pointing out the desirability of the clergy enforcing the Christian obligation of carrying out the burial of the dead promptly, innocuously, and inexpensively.

MR. WILLIAM GABRIEL ROCKWOOD, M.D. (Madras), has been appointed an Unofficial Member of the Legislative Council of the Island of Ceylon.

HOSPITAL REFORM.

A SPECIAL meeting of the Council of the Charity Organisation Society was held on June 20th at the United Services Institution to discuss suggestions for the reform of the casualty and out-patient departments of London hospitals. Sir JOSHUA FITCH was in the chair and there was a large attendance.

Mr. T. CLINTON DENT, surgeon to St. George's Hospital, described an experiment which is about to be made in connexion with the New Belgrave Hospital for Children. It was proposed to guard against the overgrowth of the number of out-patients by limitation of new cases and selection and at the same time to place a check upon the undue multiplication of casualty patients. Mr. Dent pointed out that unless this were done any rule limiting the number of out-patients, however strictly observed, would be useless. Although the number of applicants in the surgery of a children's hospital was infinitely smaller than in a general hospital, it was of equal importance to avoid the treatment of ineligible cases and to prevent the surgery from becoming a vicarious out-patient department. Of course, if a case brought to the surgery was so serious that it could not be sent away it would have to be admitted to the in-patient department; but generally speaking the same inquiry would be made in the surgery as in the out-patient department as to the circumstances of the parents and the same regulations would apply. The chief difficulty in a children's hospital was to guard against indiscriminate prescribing. Mr. Dent contested the view that every patient who applied as a "medical casualty" must necessarily receive treatment.

Mr. Dent described in detail the measures which were proposed for the limitation and selection of cases. The number of new cases to be seen by the medical officer at each attendance would be limited to fifteen. Preference would be given first to the most serious and acute cases. Next in order of preference would come those recommended by medical practitioners, while third in order would come those bearing certificates from governors of the hospital. It was not likely that this last class would be numerous, but great importance would be attached to the recommendations of medical practitioners. In fact, the principle underlying the whole scheme was the desire to work with, and not in antagonism to, the general practitioner. The best possible arrangement in his opinion would be for the general practitioner to be practically the almoner of the charity, as no one would probably be so well qualified to judge of the necessities of the case or better informed as to the circumstances of the parents. As to this point it was intended to employ an inquiry officer as an experiment. The benefits of the hospital would also be guarded by a wage-limit estimated on the proportion of the family income to the family. The wage-limit had been purposely fixed low in order that the benefits of the hospital might go to the very poor, for whom they were intended. A register would be kept of the out-patients setting forth age, name, and address, the dates of admission and discharge, and the occupations and wages of the parents. This register would be open for the inspection of local practitioners and the representatives of charitable institutions.

The most novel feature in the new scheme was an arrangement by which the hospital should be available for consultation by people who, though able and willing to pay the moderate fees of general practitioners, could not afford a consultant's fee. Any registered medical practitioner would be allowed to bring to the out-patient department patients under his own care for consultation with members of the honorary medical staff. The actual attendance of the practitioner at such consultations would be eminently desirable and written statements would only be received in exceptional cases. No treatment would be given at the hospital in these cases, but the diagnosis made and the treatment advised would be communicated to the practitioner. The question of charging a fee for such consultations had been considered and the committee were in favour of a small payment. Mr. Dent pointed out that the scheme was only experimental.

Mr. Dent's description of the proposed arrangements in connexion with the new Belgrave Hospital was followed by a short paper entitled Suggestions for the Reform of Casualty and Out-patient Departments, contributed by Mr. W. H. KESTEVEN. It was admitted that the number of cases attending the casualty departments had increased of late years with excessive rapidity, while there had also been an increase of out-patients, and that many cases in both departments were of a trivial character which could be dealt with satisfactorily by general practitioners and for which hospital aid was unnecessary. The practical suggestions which he submitted as the result of conference with others were that all casualty cases should be seen by a medical officer, who should select from them cases which were urgent or of value for educational purposes, referring the rest in general terms to local medical men or an approved provident dispensary. In the out-patient department also the selection was to be made by a medical officer, but the suggestions for disposing of them were more complicated, including a limitation of the number of new cases to 15 or 20, a preference for members of friendly societies, provident dispensaries, and others recommended by their own medical attendants, and the reference of destitute cases to the Poor-law. The suggestions also included the employment of a trained almoner to make inquiries. Mr. Kesteven suggested the advisability of hospitals ceasing to provide drugs and giving prescriptions instead; this would bring the expenditure of hospitals within their means and would secure more experienced treatment for the sick poor who had to resort to them.

A discussion followed in which several medical men took part.

Mr. GARRETT HORDER congratulated the Charity Organisation Society on having secured two such practical papers after years of talk. He questioned the wisdom of Mr. Kesteven's suggestion that prescriptions should be given instead of medicines and he referred to the successful working of admission committees at Oldham and Dorchester. It seemed to him to be a suitable plan for small hospitals.

Mr. NELSON HARDY welcomed the Belgrave Hospital scheme as the first serious attempt on behalf of an established institution to deal with a problem which had been agitated for thirty years and more.

Dr. WARING (Brighton) gave some figures, which have already appeared in THE LANCET, showing that over a quarter of the inhabitants of Brighton and Hove appear to have been in receipt of hospital relief in 1896. He also stated that in a recent year no less than one-third of the births had taken place in the West-street Lying-in Hospital.

Other speakers took part in the discussion, and after brief replies from Mr. DENT and Mr. KESTEVEN the meeting closed with a vote of thanks to Sir Joshua Fitch for presiding.

THE ROYAL COMMISSION ON THE METROPOLITAN WATER-SUPPLY.

THE twenty-seventh sitting of the Royal Commissioners was held at the Guildhall, Westminster, on Monday, June 27th. With the exception of Mr. Cripps, Q.C., all the Commissioners were present. The first part of the sitting was occupied by hearing the evidence of Mr. James Bigwood, M.P., the Chairman of the Parliamentary Committee of the Middlesex County Council, and Member of Parliament for the Brentford Division of Middlesex. The latter part of the sitting was occupied in hearing the evidence of Mr. E. J. Halsey, the Chairman of the Surrey County Council.

Mr. BIGWOOD, in answer to the CHAIRMAN, said that the area over which the Middlesex County Council had jurisdiction was partly within the limits of supply of the New River, the West Middlesex, the Grand Junction, and the East London water companies, and that the most thickly populated part of Middlesex, which was close to the boundary of London, was supplied by the three first-mentioned companies. The actual sources of the water were situated in the county and in the opinion of the witness Middlesex had a claim to the water found in the county. A large quantity is obtained in Middlesex by the New River Company at White Webbs, Highfield, Campsbourne, and Bettstile wells, situated respectively at Enfield, Edmonton, Hornsey, and New Southgate. During the last twenty-five years the population of Middlesex has practically doubled. The people of Middlesex wish to be a separate body, independent of London both as regards rating and in every other respect, and the Middlesex County

Council had petitioned against the various water Bills which had been promoted from time to time since the year 1891 by the metropolitan water companies and also against the transfer and purchase Bills which had been introduced by the London County Council. The position which the people of Middlesex took up with regard to the water-supply might be briefly summarised as follows:—1. That no scheme would be acceptable to Middlesex which did not provide for no further water being abstracted from the Middlesex water-supply. 2. Which did not give independent control from the beginning to Middlesex (*a*) of their sources of supply; (*b*) of their service. 3. Absolute non-interference with Middlesex either as to rating or otherwise. The witness thought that although it might possibly be advantageous in some provincial towns that the management of the water should be under the local authorities, it did not follow that that would be the best course in such an area as "Water London," which included not only the metropolis, with a population of nearly 4,500,000, but also the outside population of "Greater London," which in 1891 amounted to 1,401,688; and the outlying parts of "Water London," which in 1891 amounted to 76,041. Should it be thought that the water for Metropolitan London would be best managed by one authority it did not follow that the London County Council should be the authority entrusted with that management. In the opinion of the witness the London County Council had not time to devote to the matter and, moreover, the water-supply should not be managed by an elected body. It was his opinion also that there was plenty of water to supply the wants of Middlesex in the soil of the county and in the Thames.

In answer to Mr. MELLOR the witness said that he himself had dug a well and found an abundant supply of water. The Parliamentary Committee of the Middlesex County Council in the year 1891 formulated their views on what the necessities of the county required in connexion with the question of the water-supply. The resolution was as follows:—

1. That the interests of the county require that in any dealing with the question of the London water-supply, as it affects Middlesex, provision should be made against (*a*) the sinking of any new wells in the county, (*b*) the deepening of any existing wells in the county, (*c*) for limiting the abstraction of water for the London or any other external supply from Middlesex.

2. That no scheme will be acceptable to Middlesex which does not provide (*a*) for no further water being abstracted from the Middlesex area; (*b*) for the independent control (from the beginning) of (1) the source of supply, (2) the supply service; (*c*) for the absolute non-interference with Middlesex, either as to rating or otherwise.

The Middlesex County Council thought that it would be distinctly against their interest that any outside authority should acquire the powers of any of the metropolitan companies with reference to the supply of water in the area which was under the jurisdiction of the Middlesex County Council and that no outside authority ought to be empowered to control or in any way interfere with their supply. The interests of such an outside authority as the London County Council might and probably would be antagonistic to those of the county of Middlesex. Briefly, Middlesex preferred that matters should remain as they are at present and strongly protested against being made a party to the scheme for bringing water from Wales. The Middlesex County Council had at present no jurisdiction over the water supplies and they appeared before the Commissioners to protect the interests of their county, and whilst they were willing that London should take any steps for itself, they on their part protested against the London County Council or any other body interfering in any way with the county of Middlesex. Should any outside authority have such power as the London County Council sought to obtain the results which might be expected would result in (1) Attempts to annex, thereby enormously increasing rates; (2) involving Middlesex in any new scheme which it does not want, and thereby saddling it with still vaster rates for no useful purpose, against its will; (3) compelling Middlesex to pay far more for its water than consumers in London do; and (4) compelling Middlesex to bear part of any burden cast upon Surrey or on South London in which Middlesex has no interest, for supplies which they may need but Middlesex does not.

The witness put in a table which showed that in many cases in which provincial towns supplied outlying districts more was charged for the water in those districts than in the town itself—for example, in the case of Ashton the outside consumers paid 25 per cent. more, and in the cases of Guildford, of Halifax, and of Burnley no less than 50 per cent. more than the inhabitants of those towns were called upon to pay. In the opinion of the witness the scheme for the purchase of the undertakings of the water companies should be rejected and additional powers of control over the present undertakings should be granted. The witness suggested that a Board of Control should be formed with a view to secure the following results:—

1. Sufficient supply to all consumers, whether within or without the county of London. 2. Efficient, and very stringent, methods of preventing waste. 3. The primary right of the inhabitants of any district, from which water is abstracted, to a sufficient supply to meet their requirements. 4. More economical administration of the companies' affairs. 5. The application of any dividends in excess of 10 per cent. on the paid-up capital of any company, to the reduction of water-rates. It might possibly be necessary to come to some arrangement with the companies, especially the Southwark and Vauxhall, and the New River Companies, as to their maximum dividend. 6. Easy and simple method, by application to a tribunal or officer, who can at once and without waste of time, settle questions in dispute between any company and any water consumer. This is partially met by the Metropolitan Water Act, 1897. 7. The right to make up back dividends to be restricted and to be extinguished by such a capital sum as is just in each case. 8. That the companies should be placed under regulations analogous to those under which the gas companies now carry on their undertakings.

The CHAIRMAN examined the witness in some detail with regard to the formation of a board of control and as to how the orders given by the board should be carried out, whether the board should have power to order fines and imprisonment, power, for example, to take a recalcitrant water company director and put him in prison. The witness replied that he had not worked out the details of the manner in which control should be exercised, but he insisted that there were at present matters which required control and he gave in detail the example of a firm of distillers on whom one of the water companies had served a long list of demands, some of which he thought frivolous and some ridiculous. One of these demands referred to the size of a cistern: the company had insisted that a three-gallon cistern should be substituted for a two-gallon one, and shortly afterwards that a two-gallon cistern should be substituted for the new one which had just been put in on their demand. The witness thought that the local authorities should not continue to have the power to alter the level of the public roads in such a way that the distance of the water mains below the surface of the road was lessened and the mains were therefore exposed to the danger of frost.

In answer to Mr. CRIPPS, the Parliamentary agent of the London County Council, who cross-examined in the absence of learned counsel, the witness said that the people of Middlesex objected to having their own water first taken from them without payment and then sold back to them again. In his opinion London was not at present adequately supplied with water. A sufficient amount, for example, was not used for cleansing the streets.

In answer to Lord ROBERT CECIL, who appeared on behalf of the Hertfordshire County Council, the witness said that his contention was that the underground water belonged to the county in which it was situated, and that Middlesex had a right to a share in the Thames. With regard to the metropolitan water companies he thought that some of them had harshly exercised their powers with regard to water fittings, and he thought they were wrong in insisting on payment for water which they did not supply in periods of drought.

Mr. E. J. HALSEY, Chairman of the Surrey County Council, gave evidence with regard to the attitude of that body. In May, 1895, the Surrey County Council had explained fully their views to the Local Government Board and had condensed their reasons for their opinion. The Council adhered to the views which they then expressed and which were briefly as follows: (1) They considered that the council of another county should not have any jurisdiction within the county of Surrey and (2) that by any future action of the London County Council no part of Surrey ought either directly or indirectly to be made liable for the cost of providing a fresh supply of water for London, which they apprehended might happen if the London County Council obtained any control, however slight, of the water-supply available for any part of Surrey.

In answer to Major-General SCOTT the witness said he understood that in the case of purchase the London County Council proposed that Surrey should at first have the amount of water from the Thames which they take at present plus 20 per cent., but if more water were wanted afterwards Surrey would certainly claim her share. Surrey had, however, supplies of her own from the chalk and from the lower greensand.

In answer to the CHAIRMAN the witness said that he could not imagine a Water Board so constituted that it would be a fair one. However "good and delightful" Welsh water might be Surrey did not want it.

In answer to Mr. DE BOCK PORTER the witness said that the Surrey County Council were not entirely satisfied with the present supply given by the metropolitan water companies; they had, however, at present not had sufficient time to see the effects of the Act of 1897.

In answer to Major-General SCOTT the witness said that for his part he did not very much admire that Act, the machinery he thought was too cumbrous and too expensive. It would be better if a department were created at the Local Government Board or the Board of Trade to which application could be made in case of complaint. A department so created would be absolutely impartial and judicial, and small matters could be much better rectified in that way by a less formal and more friendly appeal than by a process of law. Complaints had lately been made at Kingston with regard to the hours at which the supply was given. It was thought that there might be a delay in getting water in case of a fire. The witness was strongly of opinion that the purchase of the metropolitan water companies' undertakings would not be a good thing, but if purchase were carried each county should undoubtedly have entire control of its own supply.

In answer to Mr. PEMBER, who appeared for some of the metropolitan water companies, the witness insisted that the Kingston people had a distinct grievance in not having had a constant supply of water.

In answer to Lord ROBERT CECIL, the witness said that should it be found necessary to exercise any new form of control it would be most easily and efficiently carried out by a special department under the Local Government Board.

In answer to Mr. CRIPPS, the witness said that the purchase and management of the metropolitan water companies' undertakings by the London County Council would be the worst possible arrangement that could be arrived at.

At the conclusion of the sitting the chairman announced that two sittings would be held next week and that the Commissioners proposed in future to sit regularly twice a week.

THE PRESS BAZAAR.

HER ROYAL HIGHNESS THE PRINCESS OF WALES, accompanied by Her Royal Highness the Duchess of York, arrived punctually at half-past two on Tuesday afternoon last at the Hotel Cecil to open the Press Bazaar in aid of the London Hospital. The Royal party were received by the Hon. Sydney Holland, chairman of the London Hospital, Viscount Knutsford, Lord Tweedmouth, and Mrs. J. A. Spender, honorary secretary of the Bazaar.

"From the entrance the Royal party were conducted to the Oak Room, where the Bazaar Committee were presented to Her Royal Highness.

"The Dowager Countess of Shrewsbury as editor in chief of the *Press Bazaar News* welcomed Her Royal Highness's visit to our office.

"The managing editor was then introduced and Her Royal Highness expressing an anxiety to learn something about the linotype machine Mr. Joseph Lawrence, the chairman, explained the mechanism.

"Special bars were struck commemorative of the Royal visit and handed to their Royal Highnesses."

This is the account of the opening as reported in the *Press Bazaar News*, the official organ of the Bazaar, and our apology for giving it in our contemporary's words instead of devoting some columns to describing the highly interesting scene in our own language must be that no great facility was given to the press for seeing or learning what was going on.

With the exception of absence of provision for the press the Bazaar must be pronounced a decided success, for in no sense can overcrowding be looked upon as other than a virtue at such a function. On both days the rooms devoted to the Bazaar and the approaches to the hotel were thronged with fashionable London, and the display of millinery in the carriages which blocked the Strand during the afternoon of Tuesday was a thing to be seen to be believed in. The newspapers represented at the stalls were: *Queen*, *Referee*, *Weekly Dispatch*, *Stage*, *Sun*, *Tablet*, *Vanity Fair*, *Truth*, *Westminster Gazette*, *World of Dress*, *Illustrated London News*, *Sketch*, *Lady's Pictorial*, *Jewish Chronicle*, *The Lady*, *Morning Post*, *Ladies' Field*, *Strand Magazine*, *Country Life*, *Daily Mail*, *Evening News*, *Naval and Military Magazine*, *Observer*, *Sunday Times*, *Punch*, *Artist*, *Black and White*, *Daily Chronicle*, *Hospital*, *Financial News*, *Gentlewoman*, and *Graphic*.

We cannot attempt to enumerate either the articles for sale or the names of the benevolent ladies who gave their time and energy to selling them, but our readers will have seen full reports of these matters in the daily press. The wares ranged from dairy produce to jewels and from strawberries and cream to monkeys on sticks, and the wives and daughters of the peerage and of editors and proprietors of journals assisted lady-journalists and the aristocracy of the stage to dispense them. Perhaps the most practical stall was that of the London Hospital, presided over by the sisters in their pretty pale-blue dresses. Here clothing of all kinds for charitable purposes could be bought and not a few of the visitors returned their purchases to the Sisters in order that the garments might be given to the patients in the wards of the hospital. The Princess of Wales and the Duchess of York made several purchases at this stall, as they did also at many of the other stalls.

Quite a novel feature of the Bazaar was the issue of the daily paper from which we have already quoted. The *Press Bazaar News*, described as the "dearest little paper in the world," the price being 1*s.* per copy, was a four-page paper with four columns to a page and its entire production was carried out in the Oak Room of the Hotel Cecil. Mr. F. C. Gould drew for its pages three political cartoons in his well-known style. They represent Mr. Joseph Chamberlain, Lord Salisbury, and Sir William Harcourt as visitors to the bazaar with their purchases. Mr. Chamberlain has bought a bust of Kruger, some long spoons, and a case of Russian caviare, and Lord Salisbury has indulged in the luxury of a Dutch clock (with pendulum) and a china vase. The best satire of all is the representation of Sir William Harcourt with Foxe's Book of Martyrs under one arm and a censer in the disengaged hand. Mr. Henry Irving as dramatic critic contributed an amusing account of a recitation entitled "Gemini et Virgo." In connexion with the issue of the paper the press museum formed a feature which attracted many of the visitors.

It remains to be added that some of the most eminent actors and actresses in London contributed to the dramatic and musical entertainments which were provided by the management.

The exact sum which will be received by the London Hospital as the result of the Bazaar has not been announced as we go to press. That the sum will be over £10,000 seems certain, which alone constitutes, we believe, a record, but the takings at several of the stalls have not yet been sent in to the honorary secretary. We have to congratulate Mrs. Spender on the splendid result of her idea. That she has received hearty and influential coöperation is certain; but the Bazaar was initiated by her and the hard work of turning an idea into a going concern was borne wholly by her, and she deserves the hearty thanks of the great charity for the funds of which she has done such a splendid stroke of business. We, in common with many other journals, and perhaps with even more obvious reason, were unable to be practically associated with a bazaar having for its object the relief of one particular London hospital, but this does not prevent us from sympathising with the work and rejoicing at its success.

THE BATTLE OF THE CLUBS.

NOTTINGHAM MEDICAL UNION.

THE annual report of the Council of this Union was adopted at the general meeting on June 1st. In December, 1897, the following important circular was issued to all the members:—

Recent legislation with regard to friendly societies has legalised the admission of juvenile members to adult lodges and members of the Union have been approached on the subject of admitting such juvenile members at rates of payment differing from those of adults.

Under these circumstances the Council of the Union think it desirable

to remind members that the agreement of Oct. 7th, 1896—"I hereby undertake after Jan. 1st, 1897, not to enter into any new club or contract engagement for less than 4s. per year per member"—applies to juvenile as well as to adult members.

Reports were made to the last meeting of the Council of flagrant instances in which patients of members had been canvassed by agents of one of the medical aid associations, and it is suggested that the promises made a little more than a year ago have not been kept; but the Council have not seen their way to advise any more active policy as regards the medical aid associations this year than last and for the same reason; active opposition cannot be successfully pursued until we have complete unanimity and present an unbroken front.

A few months ago there was a conference in London between representatives of the British Medical Association and some of the friendly societies. It was very amicable and the representatives of the friendly societies seemed anxious to look at all sides of the question and to consider a revision of scales. By quiet work it will gradually be made plain that the club rates must be revised sooner or later.

The question of hospital abuse has not been forgotten. There have been several meetings of the committee involving a great deal of work. A joint meeting with a committee of the monthly board of the General Hospital has been held. Work of this kind is very slow but it has been continuous.

The treasurer reports that the funds of the union are in a satisfactory state.

THE ANCIENT ORDER OF FORESTERS AT EVESHAM.

Court No. 4648, Vale of Evesham of the above friendly society is in a parlous condition as regards medical aid. On June 7th a specially summoned meeting of the court was held to consider a proposal to reduce the salaries of the medical officers, Mr. A. H. Martin and Mr. J. S. Slater, who have held the appointment for the last twenty-five years, from 5s. per member per annum to 4s. The only notice given had been by means of the agenda paper which was dropped into Mr. Martin's letter-box about a week previously to the meeting. Under the rules of the society the surgeons only hold office "according to the pleasure of the court." Mr. Martin attended the meeting on June 7th and before the resolution was put explained that if it were carried he and his partner would immediately resign. It was carried and both medical officers at once sent in their resignations, which were accepted by the court, which thereupon carried a resolution that they should advertise for another medical officer at the rate of 4s. per member per annum. All the other medical men residing in Evesham have been applied to but all refuse to have anything to do with the society at the reduced rates. The club is therefore now without any recognised medical man and the secretary has instructed any members who are ill to go to what medical man they like and then send in the bills to him. The committee of the court have refused to pay Mr. Martin and Mr. Slater the salary due to them on June 7th—i.e., one quarter's salary—and these gentlemen have therefore issued a county-court summons to obtain their due. So matters stand at present and we congratulate the medical men of Evesham upon their firm stand. We will only add that if Mr. G. Carrick, the secretary of the court, likes to send us his official account of what has happened and what is going to happen we shall be happy to comment fully on, or possibly print, it.

EAST SUBURBAN MEDICAL PROTECTION AND MEDICO-ETHICAL SOCIETY, LIMITED, WEST HAM HOSPITAL, E.

The first statutory meeting of the above society was held at the West Ham Hospital on June 23rd, 1898. There was a large and widely representative gathering of practitioners from the neighbouring districts, including some lady practitioners. Over thirty new members were elected at the meeting. The Executive Council was elected for the ensuing year. The President, Dr. F. J. Smith, delivered his address on the Aims and Objects of the Society. These were practically explained at the inaugural meeting of the society, a full report of which was published in THE LANCET of Feb. 12th, 1898, p. 459. The secretary, in answer to inquiries, explained that the scheme for the formation of local branches was under consideration; it was certainly desirable to have local representatives who should be elected as far as practicable by the local men. The secretary also said that a scheme for keeping a black list had been prepared for consideration by the council, that arrangements had been made to commence the debt-collecting at an early date and that the views of individual members would be represented by the fact that the whole council was elected annually.

It was resolved that a general meeting should be held quarterly to receive report of work done by the council.

It was stated that clinical and social meetings would be held as soon as possible and as often as desired by members.

The date of the next council meeting was fixed for Thursday, July 14th.

The headquarters of the society are at the West Ham Hospital, Stratford, E., and the hon. secretary is Mr. Murtaugh Houghton. The society is only in its youth, but there can be no doubt of the necessity for its existence, and the fact of thirty new members joining at the first statutory meeting is of good augury for its prosperity.

BRITISH INSTITUTE OF PREVENTIVE MEDICINE.

THE annual general meeting of the British Institute of Preventive Medicine was held on June 24th at Chelsea, among those present being the Duke of Westminster, the Earl of Feversham, Lord Lister, Dr. Pye-Smith, Dr. Thomas Bridgwater, and others. The chairman submitted the annual report of the council, which was adopted.

The report stated that during the year the work of the Institute has been marked by progression and expansion. The internal fittings of the new building are in an advanced state, some departments are already in full working order, and it is confidently anticipated that all will be fully equipped in the early autumn. The Institute has published during the year a volume of Transactions, which has been favourably received. The demand for diphtheria and streptococcic serum has increased and there has also been an increased demand for mallein and tuberculin. The Institute has rented laboratory accommodation to the Local Government Board for the purpose of preparing glycerinated calf lymph. It was also stated that the Institute would require a considerable addition to its funds to enable it to carry out adequately the objects for which it was founded.

The report of the hon. treasurer, Sir Henry E. Roscoe, containing the balance-sheet and statement of accounts duly audited, was submitted to the meeting and adopted. The directors' report and the reports of the scientific staff were also adopted and it was directed that these should be circulated amongst the members of the institute.

Dr. Horace Brown, F.R.S., was elected a member of council in place of the late Surgeon-General W. R. Cornish.

The volume of Transactions, published by Messrs. Macmillan and Co. on behalf of the Institute, contained nine original contributions by members of the staff. A review of this volume appeared in THE LANCET of Jan. 8th, 1898, p. 106. A number of fresh investigations have been conducted and completed during the year, some of which are published and others are on the eve of publication. There are also other investigations in progress and the laboratories continue to attract research workers. The courses of instruction given by the staff have also been well attended. About 2000 reports were sent out by the Institute during the year.

The Institute has endeavoured to encourage the periodical examination of water and water-supplies and several local authorities have requested the Institute to undertake this systematic examination on their behalf. Bacteriological work has also been undertaken for several additional sanitary authorities. In the new building every facility is being provided for the furtherance of bacteriological research and the antitoxin department at Sudbury continues to do useful work in the field of serum therapeutics.

At the close of the meeting the members inspected the fittings of the new laboratories which will be formally opened in the autumn.

THE ROYAL EYE HOSPITAL, SOUTHWARK—A festival dinner of this institution was held at the Hôtel Métropole on June 17th. The chairman said the hospital ministered to the needs of a population of nearly a million and three-quarters and last year had relieved 15,400 out-patients and over 400 in-patients, 30 per cent. of whom were under twenty years of age and about 16 per cent. under thirteen years of age. A large number of the community were thus saved from blindness and a life of comparative inutility. In the course of the evening a record sum of £2170 was announced by the secretary as the result of the dinner.

METROPOLITAN HOSPITAL SUNDAY FUND.

WE continue below our record of some of the principal amounts received at the Mansion House. At the time of our going to press on Thursday the total amount received was £32,000.

	£	s.	d.
Streatham Parish Church and Chapel of Ease	71	0	10
All Saints', Margaret-street	57	9	10
St. James, Holloway	57	8	0
St. Augustine, Honor Oak	44	1	10
St. Mildred, Lee	45	18	3
St. Augustine, Queen's-gate	84	13	3
Christ Church, Highbury	80	14	8
St. George, Beckenham	76	7	5
St. John's Wood Presbyterian Church	86	6	5
St. Matthew, Brixton	55	4	8
St. Paul Presbyterian Church, Westbourne-grove	86	13	2
Brixton Independent Church and Moffat Institute	66	11	4
Holy Trinity, Roehampton	83	12	0
St. Augustine, Highbury New-park	69	1	7
Christ Church, Southgate	50	0	0
Christ Church, North Brixton	63	12	0
St. Mary Aldermary	88	12	5
St. John's Presbyterian Church, Forest Hill	107	16	7
St. Andrew's Presbyterian Church, Upper Norwood	68	0	0
St. Paul, Forest Hill	56	5	9
St. Paul, Avenue-road	104	10	7
Gray's Inn Chapel	47	19	10
Hendon Parish Church and Christ Church	47	7	7
St. Andrew, Westminster	60	0	0
Highbury-quadrant Congregational Church	70	6	6
Lyndhurst Congregational Church, Hampstead	49	5	3
St. Giles, Camberwell	80	8	11
St. James, Piccadilly	74	16	3
Dutch Church, Austin Friars	94	18	6
St. John Evangelist, Penge	61	10	0
Heath-street Baptist Chapel, Hampstead	55	3	8
St. George, Bickley, and Widmore Mission	79	9	0
Clapham Parish Church	62	7	0
St. George, Tufnell-park	50	10	0
"F."	50	0	0
West London Synagogue for British Jews	233	15	9
St. Marylebone Parish Church	178	3	5
All Souls, Langham-place	66	16	10
Acton Parish Church and Mission	45	18	0
St. Paul, Greenwich	28	0	0
Christ Church, Westminster-road	38	6	5
St. Mary the Virgin, Hayes	24	4	6
West Hackney Parish Church and Mission	32	19	11
Willesden Presbyterian Church	45	3	11
Streatham-hill Congregational Church	31	2	6
St. John, Ealing	22	0	0
St. Dunstan, East Acton	24	11	0
St. Mary, Spring-grove	30	0	0
St. Paul, Clapham	32	2	2
St. John, Notting-hill	46	11	3
St. James, Clapton	28	10	2
St. John, Upper Norwood	28	15	8
Holy Trinity, Upper Tooting	49	16	7
Rectory-place Congregational Church, Woolwich	28	1	5
St. Mark, Kennington	33	7	10
All Saints, Putney	31	12	6
Berkeley Chapel, Mayfair	26	11	2
St. Andrew, Stockwell	24	5	10
St. Peter, Streatham	43	14	7
St. Augustine, Kilburn	48	7	2
Lewisham Parish Church	47	12	0
Highgate Presbyterian Church	41	0	2
Park Presbyterian Church, Highbury	30	0	0
Clapham Congregational Church	45	0	5
Bromley-by-Bow Parish Church and Mission	22	14	4
St. Giles-in-the-Fields Parish Church	20	19	2
Chigwell Parish Church	33	4	9
Holy Trinity, Knightsbridge	42	5	1
Newington Parish Church and St. Gabriel	27	7	4
Christ Church, Westminster	20	0	0
Park Congregational Chapel, Crouch-end	41	3	1
Miss Morice	25	0	0
Mitcham Parish Church	28	12	5
St. Anne, Wandsworth	30	7	5
St. Luke, Hackney	26	15	4
St. Paul, Upper Holloway	23	2	3
Streatham Wesleyan Church	26	0	4
Queen's Hall, Langham-place (per Rev. Dr. Momerie)	33	2	3
St. John the Evangelist, Clapham-rise	22	10	0
Regent's Park Baptist Chapel	32	1	10
Upper Holloway Baptist Chapel	22	7	8
St. Matthias, Earl's Court	34	2	2
Paddington Chapel, Marylebone-road	20	9	2
St. Jude, Upper Chelsea	20	0	0
St. John, Highbury Vale	22	4	9
St. Matthew, Hammersmith	23	11	7
St. Saviour, Denmark Park	23	14	6
St. Paul, Wimbledon Park	35	8	0
L. G.	20	0	0
All Saints, Clapham Park	46	2	2
St. Andrew, South Streatham	22	0	3
Holy Trinity, Eltham	49	12	2
St. Paul, Ball's Pond	37	3	4
Trinity Presbyterian Church, Hampstead	30	0	7
Holy Trinity, Kilburn	33	3	7
Woodford Parish Church	22	0	0
Upper Clapton Congregational Church	22	13	7
All Saints, Friern Barnet	35	6	4

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

On an outbreak of enteric fever in the Urban District of Camborne and in portions of the adjoining Rural Districts of Redruth and Helston, by Dr. R. BRUCE LOW.[1]—A sudden outbreak of enteric fever appeared in December, 1897, at Camborne, in Cornwall, a town with some 14,000 inhabitants. Simultaneously excessive prevalence of enteric fever was manifest in two rural parishes which adjoin Camborne. Altogether 165 cases, 12 of which proved fatal, were notified from these places in the course of six weeks. No doubt, Dr. Bruce Low points out, a considerable number of other cases occurred which did not come to the knowledge of the sanitary authorities concerned. The facts which Dr. Low records leave no room for doubt that the cause of this epidemic was a specifically infected public water-supply. In Camborne and its neighbourhood there are, it is true, numerous insanitary dwellings and nuisances arising from accumulation of excrement and refuse abound in certain localities. But there had been no exceptional incidence of enteric fever upon the occupants of such unhealthy dwellings and localities. And, as Dr. Low shows, the outbreak by its suddenness differed totally from what might have been expected had the epidemic been produced by excremental contamination of soil. The question of infected milk could at once be set aside. But as regards water the case was otherwise. The Camborne Waterworks Company supplies with water the greater number of houses in Camborne and also a few small areas in the adjoining rural parishes of Illogan and Crowan. Dr. Bruce Low gives the following table showing the incidence of the disease upon houses supplied and upon houses not supplied by this public service:—

Localities invaded by enteric fever during December, 1897, and January, 1898.	Houses supplied by the Camborne Company.			Houses not supplied by the Camborne Company.		
	Number of houses supplied.	Invaded by fever.	Per cent. invaded by fever.	Number of houses not supplied.	Invaded by fever.	Per cent. invaded by fever.
Camborne Urban District	2365	106	4·5	762	5	0·7
Illogan parish	810	26	3·2	1297	2	0·2
Crowan parish	158	7	4·4	427	2	0·5
Total	3333	139	4·2	2486	9	0·4

Persons attacked in the 9 dwellings not included in the area of public supply had in several instances consumed the Camborne Company's water shortly antecedently to illness. Indeed, of the total of 165 cases there were practically only 2 attacks in which there was doubt as to the persons having had opportunities of drinking water from the incriminated supply. The conditions under which water was obtained by the Camborne Water Company can hardly be considered other than scandalous. Two gathering grounds contribute to their supply. Water from the first at Cargenwyn is commonly used in the summer months only. It had been cut off four weeks or more antecedent to the beginning of the epidemic and could not therefore be considered to have had to do with the causation of the outbreak. Incidentally, however, we note that part of this Cargenwyn supply was found by Dr. Low to consist of the natural drainage of fields, upon several of which human excrement was scattered. This is hardly to be wondered at when we learn that of 19 dwellings upon this gathering ground 13 had no privy or closet accommodation

[1] London: Eyre and Spottiswoode, East Harding-street, E.C.; Edinburgh: John Menzies and Co.; Dublin: Hodges, Figgis, and Co. 1898. Price 7d.

whatever. The gathering ground which alone furnished the water supplied by the company immediately prior to and during the outbreak was that at Boswyn. Here the main source of supply is a series of springs, water from which is received in a service tank. But in addition water from a brook in the neighbourhood was conveyed to this tank by pipes. In dry weather this brook receives little pollution, but in rainy weather surface pollutions are washed into it by storm-water. Pollution of surface more especially occurs in connexion with 9 houses on the watershed area. None of these houses have any suitable drainage arrangements and six have no closet or privy of any kind. Now, in October and November 4 cases of enteric fever had occurred in one of these houses. During this time slops and liquid refuse were thrown into a small pond close by the house. There being no privy, excrement was thrown in the neighbourhood of the house on to the surface of ground which drains to the same pond. In dry weather this pond had no overflow, but in times of rainfall the pond water escaped by a small watercourse directly into the brook which fed the service reservoir. Now, the epidemic first became known by the notification of 62 cases of enteric fever between Dec. 4th and Dec. 18th, and on Nov. 12th and 13th there had been an exceptionally heavy rainfall over Boswyn gathering ground. About this date the pond, no doubt highly contaminated with infectious matter, became full and there can be no question that its overflow made its way, as usual, straight to the brook and so to the service reservoir. The water of this reservoir was delivered to consumers without filtration. The outbreak came suddenly to an end after the brook water was shut off from the service tank and after the latter had been scrubbed out and the water-mains had been well flushed.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6173 births and 3247 deaths were registered during the week ending June 25th. The annual rate of mortality in these towns, which had been 16·9 and 14·7 per 1000 in the two preceding weeks, rose again last week to 15·1. In London the rate was 14·5 per 1000, while it averaged 15·5 in the thirty-two provincial towns. The lowest rates in these towns were 9·6 in West Ham, 10·3 in Norwich, 10·9 in Croydon, and 11·1 in Brighton; the highest rates were 19·9 in Manchester, 20·0 in Plymouth, 21·4 in Sunderland, and 24·3 in Newcastle-upon-Tyne. The 3247 deaths included 302 which were referred to the principal zymotic diseases, against 381 and 341 in the two preceding weeks; of these, 89 resulted from measles, 83 from whooping-cough, 61 from diarrhœa, 36 from diphtheria, 21 from scarlet fever, and 12 from "fever" (principally enteric). No death from any of these diseases was recorded last week in Nottingham; in the other towns they caused the lowest death-rates in Croydon, Brighton, and Blackburn, and the highest rates in Plymouth, Sheffield, Gateshead, and Newcastle-upon-Tyne. The greatest mortality from measles occurred in Halifax, Newcastle-upon-Tyne, and Plymouth; and from whooping-cough in Swansea and Sunderland. The mortality from scarlet fever and from "fever" showed no marked excess in any of the large towns. The 36 deaths from diphtheria included 21 in London, 4 in Birmingham, 2 in West Ham, 2 in Cardiff, and 2 in Manchester. No fatal case of small-pox was registered last week either in London or in any other of the thirty-three large towns; and no small-pox patients were under treatment in any of the Metropolitan Asylum Hospitals on Saturday last, June 25th. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on the same date was 2238, against 2169 and 2194 at the end of the two preceding weeks; 231 new cases were admitted during the week, against 220, 206, and 230 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 212 and 185 in the two preceding weeks, further declined to 171 last week, and were 38 below the corrected average. The causes of 32, or 1·0 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Manchester, Leeds, and in sixteen other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Leicester, Preston, and Bradford.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had declined in the three preceding weeks from 23·0 to 20·2 per 1000, further fell to 19·5 during the week ending June 25th, but exceeded by 4·4 per 1000 the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 16·7 in Aberdeen and 17·8 in Edinburgh to 24·5 in Leith and 25·5 in Perth. The 589 deaths in these eight towns included 37 which were referred to measles, 27 to whooping-cough, 26 to diarrhœa, 6 to scarlet fever, 4 to "fever," and 2 to diphtheria. In all, 102 deaths resulted from these principal zymotic diseases, against 116 and 92 in the two preceding weeks. These 102 deaths were equal to an annual rate of 3·4 per 1000, which was 2·0 above the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of measles, which had been 42 and 32 in the two preceding weeks, rose again to 37 last week, and included 14 in Dundee, 13 in Glasgow, and 7 in Edinburgh. The deaths from whooping-cough, which had been 43 and 22 in the two preceding weeks, increased to 27 last week, of which 18 occurred in Glasgow. The 6 fatal cases of scarlet fever were within 2 of the number in the preceding week, and included 4 in Glasgow and 2 in Edinburgh. The deaths referred to different forms of "fever," which had been 8 in each of the two preceding weeks, declined to 4 last week, of which 3 occurred in Glasgow. The deaths from diseases of the respiratory organs in these towns, which had been 109 and 108 in the two preceding weeks, further declined to 93 last week, and were 11 below the number in the corresponding period of last year. The causes of 27, or nearly 5 per cent., of the deaths in these eight towns were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 25·1 and 21·9 per 1000 in the two preceding weeks, rose again to 22·8 during the week ending June 25th. During the past four weeks the death-rate in the city has averaged 22·4 per 1000, the rate during the same period being 15·2 in London and 20·5 in Edinburgh. The 153 deaths registered in Dublin during the week under notice showed an increase of 6 upon the number in the preceding week, and included 8 which were referred to the principal zymotic diseases, against 4 and 6 in the two preceding weeks; of these, 5 resulted from whooping-cough, 2 from diphtheria, and 1 from diarrhœa, but not one from small-pox, measles, scarlet fever, or "fever." These 8 deaths were equal to an annual rate of 1·2 per 1000, the zymotic death-rate during the same period being 1·5 in London and 2·5 in Edinburgh. The fatal cases of whooping-cough, which had declined from 5 to 1 in the three preceding weeks, rose again to 5 last week. The two deaths referred to diphtheria exceeded the number recorded in any recent week. The 153 deaths in Dublin last week included 23 of infants under one year of age, and 55 of persons aged upwards of sixty years; the deaths of infants showed a decline, while those of elderly persons exceeded the number in any recent week. Seven inquest cases and 5 deaths from violence were registered; and 51, or one-third, of the deaths occurred in public institutions. The causes of 10, or nearly 5 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

THE NEW ARMY MEDICAL WARRANT.

IT probably did not escape our readers' attention that Mr. Powell Williams stated in the House of Commons on Monday last, the 27th ult., that the warrant constituting the new Royal Army Medical Corps had been approved by Her Majesty and will be published in the Army Orders for this month.

ARMY MEDICAL STAFF.

Brigade-Surgeon-Lieutenant-Colonel Joseph H. Moore to be Surgeon-Colonel, vice W. Graves, retired. Surgeon-Lieutenant-Colonel James Tidbury retires on retired pay.

INDIA AND THE INDIAN MEDICAL SERVICES.

To be Surgeon-Colonel: Brigade-Surgeon-Lieutenant-Colonel Thomas Holbein Hendley, C.I.E., Bengal Establishment. Surgeon-Majors to be Surgeon-Lieutenant-Colonels: *Bengal Establishment:* Jarlath J. Ffrench Mullen, Eugene Cretin, Andrew Duncan, George Frederick Nicholson, Samuel Ferguson Bigger, and Sir George Scott-Robertson, K.C.S.I. *Madras Establishment:* Thomas Henry Pope, Robert Pemberton, Damodar Purshotam Warliker, James Joseph Moran, William Adair Quayle, and Henry Armstrong. *Bombay Establishment:* Charles Monks, Phirozsha Jamsetjee Damania, George Henry Bull, and Frederick Fitzgerald MacCartie, C.I.E. Surgeon-Captains to be Surgeon-Majors:—*Bengal Establishment:* William Grant Thorold, Patrick Hehir, Lionel John Pisani, Basanta Kumar Basu, Narendra Prasanna Sinha, William Rice Edwards, Charles Mactaggart, John Fenton Evans, George James Hamilton Bell, Joseph Thomas Daly, Henry Fooks, Ernest Hudson, Arthur William Dawson, and William Henry Banner Robinson.

The Queen has also approved of the retirement from the service of the undermentioned officers: Surgeon-Colonel Samuel Bradshaw Hunt, Madras Establishment; Brigade-Surgeon-Lieutenant-Colonel James Arnott, Bombay Establishment; Surgeon-Lieutenant-Colonel James Moorhead, Bengal Establishment; and Surgeon-Lieutenant-Colonel James Charles Harding Peacocke, Bombay Establishment.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain J. H. Anderson, to be Surgeon-Major.

VOLUNTEER CORPS.

Rifle: 1st Volunteer Battalion the Buffs (East Kent Regiment): Surgeon-Captain R. Bevan resigns his commission. 2nd Volunteer Battalion the Royal Sussex Regiment: Surgeon-Lieutenant A. W. W. Caudle resigns his commission; also is permitted to retain his rank, and to continue to wear the uniform of the battalion on his retirement.

THE SPANISH-AMERICAN WAR.

The most serious news from a medical standpoint at the present moment is the alleged outbreak of yellow fever among the American troops. The situation of the belligerents has of late become more acute and is at the present time interesting, but as bewildering as ever. The war policy of Spain, as regards her naval forces, baffles the understanding. With one—and the main—portion of her fleet shut up and powerless at Santiago the reason for sending the other portion from Cadiz to the Suez Canal (where it cannot coal), probably for somewhere in the Philippines, is not very obvious, for it cannot reach its destination in time to be of any service as far as Manila is concerned, and Admiral Dewey's squadron there is strong enough to defeat it if it does. It is quite possible that the object of the Spanish Government is simply to put Admiral Camara's fleet in a safe place on this or the other side of Suez. The interest of the situation at Manila is just now connected with the policy of the Germans in that quarter. Meanwhile the Americans are about to send some of their war-vessels into Spanish waters to threaten and bombard Spanish ports and then to follow up and engage Admiral Camara's fleet. An American force has invaded Cuba and had two sharp fights with the Spaniards, and this force is to be followed up by a much larger one for the capture of Santiago. In the small engagements the Americans lost an officer and 11 troopers, while some 50 men, including 6 officers, were wounded and are lying in the field hospital near Juragua. The American troops are about three miles from Santiago, where the Spaniards are strongly entrenched, and severe fighting may be shortly expected. It may prove a serious undertaking to drive the Spanish troops out of their entrenchments. Santiago and its vicinity will be strongly bombarded by the States war vessels previously to an attack. The heat is very great and the uniform provided for the American troops has been found to be unsuitable and altogether too heavy for the Cuban climate. The situation of the garrison of Manila is bad. There is a good deal of sickness, 1000 sick and 200 wounded being in the Spanish military hospitals. The heavy rains have increased the difficulty of holding the outworks and trenches.

RECRUITING.

It is, of course, too early to form any judgment as to what effect the new and more advantageous regulations will have upon recruiting for the army, but we confess to having some misgivings on the point. There can be no doubt that the soldier of the present day is very well off compared with what he was: he is better fed, lodged, clothed, and looked after and, considering the class from which he is commonly drawn, he is fairly well paid and he gets his money with the regularity of clockwork if he has not always so much of it at his disposal as in civil life. It is not the dislike of fighting or adventure which keeps young fellows out of the army, for a war quickens recruiting. It is the dislike of the discipline and routine of barrack life, the curtailment of liberty and loss of independence, together with the prejudice against the army as an occupation so frequently entertained on the part of the relatives and friends of the would-be soldier which deter them from enlisting. With the spread of education and the increase of intelligence it is not likely that this dislike to the restraints of military life will grow less. The army will have to move with the times. Discipline there must be if an army is to be kept efficient as a fighting machine. The point to be determined, however, is the nature and amount of it essential for the purpose and the extent to which petty and irksome restraints and interference with the soldier's liberty and independence can be removed or lessened without injury to the disciplinary spirit.

DEATHS IN THE SERVICES.

Brigade-Surgeon-Lieutenant-Colonel William Alexander Barren, I.M.S., Bombay Sappers and Miners, on June 8th, in his forty-ninth year. He entered the service in 1874 and served in the Afghan War of 1880 in medical charge of the 4th Bombay Infantry (medal); he also served in the Burmese expedition of 1886–88 (medal with two clasps).

Surgeon-General William Henry Adley, I.M.S., of Cleddy Lodge, Haverfordwest, on June 18th, aged seventy years.

Surgeon-General Frederick Morrison Clifford, I.M.S., Bengal (retired), on June 15th.

Surgeon-Lieutenant-Colonel Breame Weston Fowler, A.M.S. (retired), at St. Helena, in his forty-seventh year. He entered the army in 1873, was promoted to Surgeon-Major in 1885, and to Surgeon-Lieutenant-Colonel in 1893.

Surgeon-General J. C. Morice, I.M.S. (retired), on June 24th, aged sixty-one years. He entered the army in 1856 and served in the Indian Mutiny Campaign (medal with two clasps). In 1868 he served in the Hazara Campaign and took part in the operations on the Black Mountains (medal with clasp). In the Expedition of 1885 to Suakin he was mentioned in despatches (medal with clasp and bronze star).

GOOD SERVICE PENSION.

We have to congratulate Surgeon-General Alexander Smith, M.D. Edin., C.B., honorary physician to the Queen, on the fact that a good service pension of £100 per annum has been awarded to him. He entered the medical service in 1846 and retired from it in 1884. Surgeon-General Alexander Smith took part in three campaigns—namely, in the Crimea at the siege of Sebastopol and the attack on the Redan on June 18th, 1855, in the Jowaki expedition of 1877–78, and in the Afghan war of 1878–79–80 (as Principal Medical Officer of Sir Donald Stewart's force) at the actions of Ahmed Khel and Urzoo, on which occasion he was mentioned in despatches and was created C.B. He received medals and clasps for the foregoing campaigns and was appointed honorary physician to the Queen in 1894.

THE EXPEDITION TO KHARTOUM.

We understand that Surgeon-Major-General Taylor is to go as the principal medical officer of the Expeditionary Anglo-Egyptian force when the advance on Khartoum takes place. He has the reputation of being a good organiser and a clear-headed, energetic man of business. We congratulate him on his appointment to the post and on his good fortune. We understand that some 260 sick and wounded have come down to Cairo from the front and it is possible that they may be followed by about the same number before the advance takes place.

MEDICAL MAGISTRATES.—Mr. Marsham A'B. McCarthy, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., of Summer Hill, near Sydney, New South Wales, has been appointed a magistrate for New South Wales. Mr. George M. Anderson, M.B., Ch.M. Aberd., of Franklin, Tasmania, and Mr. P. J. A. Rockett, M.B., Ch.B. Melb., of Derby, Tasmania, have been appointed magistrates for Tasmania.

Correspondence.

"Audi alteram partem."

"THE STATISTICS OF DEATH IN CHILD-BIRTH."

To the Editors of THE LANCET.

SIRS,—Mr. T. A. Coghlan's paper, read before the Royal Statistical Society on June 21st and briefly reported in your issue of June 25th, is worthy of the fuller notice of those who are interested in vital statistics and of those also who are concerned with the problems of child-birth. The paper is a report by the Government Statistician for New South Wales of an investigation into the births (query, rather confinements—the two are not distinguished as they should be in the paper), 115,669 in number, which had occurred in that colony during the three years 1894–96, and the deaths of mothers at child-birth, numbering 813 in all. Of the entire number of births, 9920, or 8·6 per cent., were illegitimate (with 99 deaths), a proportion which may be compared with that of 4·2 in England and Wales (1895), where we have witnessed a steady decline since 1850, when the proportion was 7 per cent.

The mortality of all the mothers amounted, it will be seen, to 7·0 per 1000 births; the married showing 6·7 and the unmarried 10·0 respectively, a higher death-rate for the latter which is to be expected, and which would perhaps have been still higher but that the bulk of such labours occur "in public institutions, which make the treatment of child-bearing women a special feature of their work." Some correction may be needed for multiple births, and still-births if registered.

We may compare these rates with that of 4·72 per 1000 births, which was the mean puerperal death-rate for England and Wales during the 30 years 1861 to 1890 (one mother dying out of 212 births). The difference is not very great and may perhaps be partly explained by the less accessible medical and other help at confinements in a colony where the population is widely scattered.

Mrs. Garrett-Anderson, who was present at the discussion, stated her belief that of late years in this country, since the adoption of antiseptic midwifery, the number of deaths in childbirth had greatly lessened. I fear that there is as yet no evidence of this very desirable result, however much we may hope for it in the future. The Registrar-General's returns show a fluctuating mortality from year to year, but on the whole very little improvement can be claimed. In 1895, the last year for which abstracts have been published, there was a death-rate from puerperal causes of 4·57 per 1000 births. But in 1893 it had been 6·51. Considering, however, the greater accuracy of the returns during recent years it is probable that the actual fatality is rather less than it was. Dr. Boxall,[1] Dr. W. Williams,[2] and Dr. Cullingworth[3] have fully illustrated this subject in your columns, and the first-named has shown that there is more evidence of lowering of the death-rate in London than in the provinces.[4] But the chief value of Mr. Coghlan's paper lies in his investigations into the effect of the number of the confinements and the age of the mother upon the mortality. This is a subject to which, it will be remembered, the late Dr. Matthews Duncan devoted much labour. He found it very hard to get data, and those which he obtained dealt with small numbers only. In his work, "Fecundity, Fertility, and Sterility," published in 1866, he has recorded all the observations he could find, and has drawn certain conclusions from them. Mr. Coghlan's data, although still on a small scale, are much larger than any in Dr. Duncan's possession; and, indeed, so far as I am aware, than any that existed. So that this paper is one of great importance in its own line of study, and cannot fail to be often referred to in the future.

The first question Mr. Coghlan takes up is the risk to life at each confinement. His conclusions agree closely with those of Matthews Duncan. The risk at the first confinement is large, that at the following labours is much smaller, but it gradually rises again later on, until at about the ninth confinement it equals that which attends the first. Mr. Coghlan falls, as I think, into one error. The actual figures for the second labour are very low (they work out at 4·6 deaths per 1000 births, compared with 8·7 for the first labour), but in the necessary adjustment of small variations, and to form a "curve," he raises the figure, and makes the risk to fall gradually from the first confinement down to a minimum at the fourth. Now, Duncan's conclusions and his own unadjusted tables show that the risk drops suddenly from the first to the second and after that gradually rises through later labours. And it is reasonable that it should be so. At the first labour the woman's strength and fitness for parturition are tested and the presence of mechanical or other difficulties revealed. It is more tedious than later labours, the nervous distress is greater, and the majority of illegitimate births is included in the category of primiparæ. All these circumstances increase the danger to life at this labour, whilst the second and subsequent confinements occur only to those who have passed through this ordeal, whose fitness has been tested, and who have retained their health so as to become again fertile.

Mr. Coghlan's tables and diagrams on the risk at first confinements confirm Matthews Duncan's views entirely, and the same is the case with his observations on the effect of the age of the mother. The only difference is that he places the age of least risk at twenty-three years, whilst Duncan makes it twenty-five, both agreeing that the risk rises on moving from this age to either an earlier or a later period of life. The extent of the increased risk is well shown, especially as it affects the immature (before the age of twenty years) and the more elderly mothers (after that of thirty years). Women who begin to bear after thirty years of age experience a considerable mortality. Perhaps an earlier maturity of women in the Australian colonies may have some influence in fixing the age of least risk. It is a striking testimony to the judicial mind of the great Scottish observer, reasoning as he did from scanty data, that Mr. Coghlan should, as it would seem quite independently, for he never refers to Duncan, establish upon fuller data conclusions which are practically identical with his.

The latter part of the paper is occupied with a rather speculative investigation of the probability of a woman's surviving every confinement. The calculations on which this is based were much criticised in the discussion, and the results are certainly startling. It would occupy too much space to enter into them here.

Before leaving the subject may I express the hope that our own registration authorities will follow the lead of New South Wales by including in their schedules such particulars as would make an investigation of this kind possible? At the registration of a birth the number of the confinement and the ages of the father and mother might reasonably be required, and when a death is certified as from puerperal causes, or child-birth is mentioned on the certificate, the number of the confinement and the sex of the infant should be specified. Stillbirths should similarly be registered. One speaker in the discussion averred that there was a larger proportion of male births among the unmarried than among the married, and that the maternal mortality was greater in the case of male infants. The latter is very likely true, for male infants are larger than female, and their own death-rate in infancy is known to be remarkably higher than that of girls. But from this dark region of conjecture, based on scanty records, we should, if my proposal were adopted, emerge into the light of fact. We should soon obtain ample data for investigating the conditions of child-birth, and the bearing of paternal and maternal age and of the epochs of gestation upon the number, sex, and vitality of the infants, and upon the life of the mother and her after-fertility. It is not too much to hope for the discovery of new laws by which the process of reproduction is governed. Chance disappears from nature the more closely we can discern her ways.

I am, Sirs, yours faithfully,

Finsbury-square, June 25th, 1898. R. HINGSTON FOX.

[1] THE LANCET, July 1st, 1893.
[2] THE LANCET, April 18th, 1896.
[3] THE LANCET, March 6th, 1897.
[4] I find that in London in the first 24 weeks of 1898 the deaths from puerperal causes were only 174, against a corrected average for the past ten years of 240·5.

"ESTIMATES OF POPULATION."

To the Editors of THE LANCET.

SIRS,—Will you allow me to make a few comments upon the important leading article in THE LANCET of June 18th upon the subject of the estimate of the population of Liverpool?

Previous Census returns have shown that during the latter years of inter-censal periods grave errors in the estimates of populations of various cities have been made. With regard to Liverpool the error at the close of the last Census amounted to 100,000 persons—about 19 per cent. of the total population—an error great enough to vitiate the statistics published by the Registrar-General for several years preceding the Census. As you point out, Dr. Ogle, the late Superintendent of the Statistical Department, addressed a letter in 1885 to the town clerk upon the subject of the estimated population, but unfortunately data were not then available to test the trustworthiness of the estimate. That circumstance, however, can hardly be advanced as an argument for declining to consider evidence now available and which tends to show that the estimate of to-day is incorrect.

The Registrar-General estimates that since 1891 the population of Greater Liverpool has increased from 629,443 to 633,078, making a total increase of 3635. The reasons for believing that this estimate is too low may be summarised thus: Since the Census of 1891 the increase in the number of births over deaths amounts to 39,616, the increase in the number of registered voters amounts to 28,466, there is an increase of 2376 in the number of houses built over those demolished, and there is an increase in the number of inhabited houses of 14,448. This latter figure was ascertained by a careful enumeration by specially instructed constables, whose returns were made upon specially prepared forms, and whose results as far as possible were afterwards checked. Local knowledge of the conditions of labour, of the action of the Insanitary Property Committee, together with other matters, must not be left out of sight as available means of checking the correctness of the estimate of the population. So far as the birth-rate is concerned, this, it is quite true, in certain districts in Liverpool is always high, but a remarkable increase in the birth-rates is exhibited since 1891 in the old parts of the city where the under-estimate of population is believed to be most marked. Excluding the suburbs recently incorporated the birth-rate in the old city (with a population of 497,505) is, upon the Registrar-General's estimate, 37·5, as against an average of 34·9 during ten years ending 1896. It is wholly improbable that a population with so high a birth-rate is diminishing as rapidly as the Registrar-General's estimate indicates.

If the City of Liverpool had not absorbed certain suburbs, the population of the city and those suburbs would have been calculated separately, and by the Registrar-General's method the resulting total would have been 11,051 greater than it is under the Registrar-General's method now adopted by which city and suburbs are calculated as one whole. In other words, extension to the suburbs of municipal government has, in the Registrar-General's opinion, lessened the population by 11,051. I have been in communication with the medical officers of health of the other great towns with a view to ascertain whether they consider the Registrar-General's published returns as to their own cities are dependable. The medical officers of health of 29 out of 31 of the other great towns have favoured me with their replies; 5 of them consider that the Registrar-General's estimate is fairly correct, 3 are very doubtful and express dissatisfaction with the method, whilst no less than 21 are of the opinion that the method is wholly incorrect and unreliable. No doubt the views of these gentlemen are merely expressions of opinion, but nevertheless their opinions are based upon local knowledge and are entitled to serious consideration. As regards the small towns the most conspicuous instance of error which I know is that of Bootle, the population of which, according to the Registrar-General's estimate, is almost 40 per cent. higher than what those with local knowledge believe it to be; the local authority have consequently discarded the Registrar-General's method entirely and adopted an estimate of their own.

It may be asked, What does it matter whether the returns are accurate or inaccurate? The importance of the matter is very considerable. There can be no doubt that if during the greater part of the decade ending 1891 the rate of mortality had been correctly published sanitary measures would have been more actively carried into effect. As it was, the decline in the rate of sickness and mortality shown by fictitious returns obscured the need for sanitary measures. Similarly, an under-estimate of population in certain districts masks the results of sanitary measures. Old rookeries are demolished, open spaces provided, artizans' dwellings on modern patterns are erected, and, so far as the Registrar-General's returns are to be taken as an index, the death-rate of the district is higher than it ever was before. Those who believe that the returns of a Government Department are carefully considered can only conclude that the pent-up rookeries were more wholesome than the new dwellings and that money and labour are spent in vain.

It does appear that there are good grounds for the view that the published returns of the Registrar-General should either be amended or accompanied by some explanatory note showing that after so long a period from the Census the figures are to be regarded only as approximately correct. I note with satisfaction your powerful advocacy of a quinquennial census, an advocacy based on the knowledge that the present returns are unreliable and need amendment.

I am, Sirs, yours faithfully,

E. W. HOPE,

Public Health Department, Liverpool, June 22nd, 1898.

ON THE NECESSITY OF A MEDICAL INFIRMARY FOR CHESTERFIELD.

To the Editors of THE LANCET.

SIRS,—The need of a medical infirmary has long been felt and for many years I have advocated its necessity, but hitherto without success. A majority of the governors and subscribers of the present surgical hospital are against admitting medical cases, as it is contrary to its original constitution, and they maintain that its invested money or reserve fund was left for surgical purposes only, as well as the money which was spent in the erection of the present buildings. There is, in my opinion, no probability that this determination will be altered in the present generation and meanwhile the sick poor continue to suffer. I have therefore for many years recommended the erection of a separate infirmary for medical cases. There is a population of 25,000 in the borough of Chesterfield and 120,000 in the district outside without any infirmary except the one at the union, which is almost always full and, indeed, crowded. The infirmaries at Sheffield and Derby are respectively twelve and twenty-four miles distant. I have, I think, made out a strong case for immediate action being taken. I think I am right in stating that there is no district in England with such a large and increasing population without such a charitable provision.

I am, Sirs, yours faithfully,

JOHN ROSE, M.D. Aberd.,

Honorary Consulting Surgeon, Chesterfield and North Derbyshire Hospital.

Chesterfield, June 22nd, 1898.

"THE COMING ELECTION TO THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND."

To the Editors of THE LANCET.

SIRS,—In view of the approaching election of members to the Council of the Royal College of Surgeons of England I have asked an expression of opinion from the various candidates, and especially from the two provincial ones, who naturally rely on the votes of the provincial Fellows. It seems certainly strange that, although circulars have been sent out on behalf of the latter gentlemen, no statement of policy or opinion on matters of interest to the Fellows has been made. Why this should be I cannot understand. Every candidate who is to be elected by the votes of a constituency, such as candidates for Parliament, &c., always makes some pronouncement as to their policy. Why not candidates for the Council? 1. As to the question whether Members should be admitted to some share in the management of their own Council Mr. May says: "I am opposed to any change in the present mode of election to the Council and the Presidentship." 2. With regard to the question of the Council taking action to check those Members and Fellows who act for medical associations who allow touting for members he says: "While I strongly disapprove of Fellows and Members holding appointments in which touting for sick members is allowed, and would support any reasonable and legal efforts to check this evil, I cannot promise beforehand to support any particular course of action which is unknown to me."

As to the point as to how the College representative on the General Medical Council is to be elected he says: "I am not

in favour of the election of the representative on the General Medical Council by direct vote of the whole body of Fellows and Members. I should be sorry to see this mode of election introduced and cannot promise support in that direction." I may say that Mr. Richardson Cross does not wish me to publish his letters to me about the matter, but I think I may say that he wishes to keep an open mind on these questions and whilst not definitely opposing does not promise to support any of these propositions. As I have been told on good authority that one more member on the reforming side would at any rate give a majority in favour of the last proposition I think it is a pity some candidate holding these views has not come forward on this occasion. I have not received any replies up to this date from the other candidates. Trusting you will publish this for the information of the Fellows of the College.

I am, Sirs, yours faithfully,

Portland-villas, Plymouth, June 28th, 1898. G. JACKSON.

THE SALINE TREATMENT OF DYSENTERY.

To the Editors of THE LANCET.

SIRS,—A recent correspondence in a contemporary shows that the treatment of dysentery by salines (especially sulphate of magnesia) is not as well known as it should be, several writers referring to it as something new. It was, I am informed, first suggested by Bartholow in his "Materia Medica," and for the past eight years it has been much used by civil surgeons in India, *vide* Leahy's paper,[1] Poynder,[2] and Walsh.[3] In the latter the rational treatment of dysentery is discussed. A reference to Surgeon-Major Leahy's valuable paper will show the advantages he claims for the saline over the ipecacuanha treatment. Salines have also been constantly used for years by French colonial surgeons. In my experience there are three kinds of dysentery met with clinically—viz., mild, acute, and chronic.[4] Anything will cure mild cases provided they get rest in bed and low diet. Acute cases in strong persons react splendidly to ipecacuanha in large doses (from 20 to 25 gr.). Other cases are best treated by sulphate of magnesia (saturated solution). The so-called chronic form of dysentery is very different from the above. There is nothing specific about it: it is a low gangrenous form of ulceration which occurs in cachectic cases and is frequently the terminal episode in such cases. It is found in cases of malarial or tuberculous cachexia, in cases which might be called sprue, in "famine diarrhœa," and among exhausted pilgrims going to and from the shrines of India. Such cases need infinite care and patience and a milk diet. The dysenteric stools alternate with diarrhœa or there are intervals of constipation. This form of alternating dysentery and diarrhœa with periods of quiescence much resemble clinically the so-called "amœbic dysentery," with the great difference that they are almost never connected with liver abscess. But nowadays we find few believers in amœbic dysentery (except in America). Even Kartulis, having shown the amœba coli in healthy stools, is less confident as to the pathogenic *rôle* of the amœba. Other more formidable microbes seem to be the active agents. To return to the question of treatment. Rest and sago diet will cure the mild cases in a few days, hence the *post hoc* success of numerous drugs, the latest of which is cinnamon powder. For acute dysentery in strong, sturdy Europeans or natives I give ipecacuanha in Scott-Doeker's method; in the weakly I prefer saturated solution of Epsom salts (two-drachm doses three or four times a day). For chronic dysentery ipecacuanha is best avoided, and castor-oil, soda, antiseptics, such as salol and bismuth may be tried; in some cases where there is an acute exacerbation use the Epsom salts, but general treatment and milk diet are above all necessary, and infinite patience. Perchloride of mercury with opium and tinctura nucis vomicæ are also useful in chronic cases and often prevent or postpone recurrences. Pages might be written on this subject, but unless we define the class or kind of dysentery met with there is no use in recommending any particular drug. The practical clinical distinction I have made above will prevent a too great belief in the powers of a drug which may only have been tried in mild cases which scarcely need drugs at all.

I am, Sirs, yours faithfully,

W. J. BUCHANAN, B.A., M.B. Dub.,
Surgeon-Captain, I.M.S.; Superintendent, Central Gaol, Midnapore.

May 18th 1898.

[1] THE LANCET, Oct. 4th, 1890.
[2] Indian Medical Gazette, July, 1891.
[3] Ibid., September, 1891.
[4] Vide Practitioner, December, 1897.

POISONING BY STRYCHNINE.

To the Editors of THE LANCET.

SIRS,—Dr. Robert Barnes asks in THE LANCET of June 18th, "What will the anti-vivisection bigot's say to this application of experimental science to the aid of justice"? Dr. Thomas Stevenson arrived at the conclusion that death was due to poison partly by physiological tests—i.e., he gave some of the poison to animals. To what animals? Falck says that serpents and fish experience no tetanic phenomena with strychnine and that the frog is really less susceptible to strychnia than various mammals and that it requires four times the dose needed by dogs, cats, rabbits, &c., to produce an equal effect on frogs. Stillé and Maisch[1] say that birds are comparatively insusceptible to the poison. Ten grains may fail to kill a sheep; cats resist it singularly and guinea-pigs and monkeys are said to be little affected by it. "The anti-vivisection bigots" would have some justification therefore for a little scepticism about the value of the physiological test in poisoning cases. Dr. Barnes says the experimental method teaches us how to treat convulsions. But surely we have all learned the lesson by clinical experience long ago. Why do all the books on poisoning by strychnine insist on the use of anæsthetics to keep the patient perfectly quiet so as to avoid the onset of convulsions if it be necessary to recur to animal experimentation for fresh lessons in treatment?

I am, Sirs, yours faithfully,

EDWARD BERDOE, M.R.C.S., &c.

Victoria-park-gate, E., June 21st, 1898.

*** Although the dose required by certain animals may be larger the result is ultimately the same. Resistance to poisons differs even in man to some extent.—ED. L.

[1] National Dispensatory, p. 1363.

"THE MEDICAL EXPERT AID COMMITTEE."

To the Editors of THE LANCET.

SIRS,—My attention has been drawn to an article appearing in your issue of June 18th, and at the request of the sub-committee of the above I desire to allude to certain matters to which reference therein is made. It is true that at present Dr. Woods is the only medical gentleman on the committee, one reason being that it is not and does not pretend to be anything but a number of ladies and gentlemen who (being well aware of the needs of the class for which it was formed, and of the fact that whenever the services of a medical man are really wanted, no matter whether he be a consultant or a general practitioner, those services are ungrudgingly and generously rendered to the patient, whether such patient can or cannot and regardless whether he will or will not pay the usual fee) desire to secure for such class of persons the services of the consultant, but upon terms that will secure to the consultant some recompense for his advice and at the same time remove the patient from the ranks of the hospital or non-paying patients. It is quite possible that the committee might be strengthened by the addition of medical men, and this matter I can assure you will receive the careful consideration of the committee.

You have alluded in your article to the number of hours a consultant spends in the hospital doing gratuitous work. This committee is well aware of such fact and is firmly convinced that a considerable portion of such time should be spent by such consultant in seeing some of the patients he now sees, but instead of seeing them in the hospital he should see them in his own consulting-room upon the terms that the patients so seen should pay to such consultant fees within their means, for if a patient can afford to pay a modified fee, surely he should pay such modified fee rather than nothing at all to the consultant. The consultant will give the patient the benefit of not a part, but the whole of his skill, learning, and

experience, and surely the patient should make as large a return as possible to the consultant. One of the aims of this committee is to ensure such a result. This committee is told that it is not always easy, neither is it desirable, that a general practitioner should, whenever he desires his patient to see a consultant, place himself under an obligation to such consultant, and if under the circumstances indicated an obligation is imposed, it is suggested it would be better for the same patient to see the same consultant by means of this committee and transfer the obligation from the general practitioner to this committee. It is perhaps using too wide an expression to say that a consultant would be putting himself into the hands of this committee were he to see patients recommended by the committee, for the plan adopted leaves the choice of the consultant entirely with the patient and his medical attendant, and every time a consultant sees a patient recommended by this committee he is specially asked so to do and can, of course, refuse or comply with such request; but in order that such patient may have as large a choice as possible and in order that it may not be suggested that the committee desires to further the interest of any special consultant or consultants, the committee has asked practically all the London consultants to see patients whom it has recommended. A large number of consultants to whom the circular letter was recently sent have sent replies, some consenting to see patients, others declining, and the refusals have (with two exceptions only) been most courteous and in numerous instances the objects of the committee have been approved in a most encouraging manner.

It is, of course, only natural that many (more particularly the junior) consultants, before complying with the request made by this committee will await the decision of their seniors and particularly of those in whom the governing power of the two great medical colleges is vested; and such being the case it is hoped that such decision may be based and given not upon any defect in the details of the scheme that may be readily cured, but upon the main objects of the scheme as disclosed in the circular, and that such decision may strengthen the hands of the committee and bring to the aid of that class of people to which I have already referred, the inestimable benefit of the services of the consultant in such a manner that the patient willing and able to pay something has the satisfaction of knowing that he has to the extent of his means recognised (although possibly not discharged) his liability to the medical or surgical expert of whose services he has availed himself.

I am, Sirs, your obedient servant,
S. GISSING SKELTON, Hon. Sec.

27, Lincoln's Inn-fields, W.C., June 27th, 1898.

A CORRECTION.

To the Editors of THE LANCET.

SIRS,—Permit me to draw your attention to a printer's error in the report of my speech delivered at the dinner of the Indian Medical Service. The mortality stated on line 17, page 1769, col. 2, in THE LANCET of June 25th, should be 0·4, and not 4, per cent.

I am, Sirs, yours faithfully,
J. JAMESON.

June 24th, 1898.

THE SCHOOL BOARD FOR LONDON.

To the Editors of THE LANCET.

SIRS,—It is sincerely to be hoped that no medical gentlemen will offer themselves for the lectureships on "First Aid" and "Nursing" for the evening continuation schools of this Board. The object is apparently to cut the ground from under the ambulance department of the Order of St. John of Jerusalem and to get the work done at a lower cost. Truly the time of a medical man must be reckoned at a very low value to offer a fee of half-a-guinea for a lecture of two hours' duration. The medical officer of the School Board for London has, I should think, not been consulted in the matter, or if he has, he must have a very peculiar idea as to the amount of remuneration which professional services demand.

I am, Sirs, yours obediently,
F.R.C.S.

June 27th, 1898.

"THE ALLEGED DEARTH OF QUALIFIED ASSISTANTS."

To the Editors of THE LANCET.

SIRS,—Permit me to say a word or two on the assistants' side of this question. I and others have advertised for assistancies and certainly our replies do not show that assistants are greatly in demand. One man offers me £60 per annum indoor; another would engage me at a fairly good salary if I were not a few pounds too heavy for his horse to carry; another wants a married man, as if on the usual salary offered a man in his senses dare marry; another still wants a single man; one offers an unfurnished house, which naturally suggests that he wants a man who has been an assistant before and will always continue to be an assistant; and another offers a small salary with a view to share in the practice after a certain probation (and if no agreement is made at first he is often found unsuitable at the end of his probation). Nothing much is said about the main question—whether the man is able to practise his profession intelligently. Again, I was tempted with the offer of £130 "out" with commission. On inquiry I found that the annual commission amounted to a little over £3. I have been told also by several gentlemen that they were compelled to engage qualified men on account of the action of the General Medical Council, otherwise they would not on any account employ qualified assistants. I think the main question is one of remuneration, as with the present salaries a man may spend his life as an assistant unless he has means or influence besides. In any case he usually spends the best part of his working life for the benefit of others. I enclose name and address, not for publication.

I am, Sirs, yours faithfully,
M.D., M.CH.

June 21st, 1898.

To the Editors of THE LANCET.

SIRS,—I am one of those who appreciate the action of the General Medical Council in doing away with unqualified assistants. These latter, whether married or single, knew perfectly such would come to pass and should have been prepared for the inevitable either by getting qualified or seeking other employment. As has often been suggested, the General Medical Council should go further and put down quackery (herbalists and bone-setters) and prescribing chemists.

I agree with "M.A. Cantab., &c.," that tempting salaries offered by principals are very few indeed. I once got a situation having a tempting salary as I thought, but I found the work not very tempting—in fact, slavery night and day. My experience of principals is that they are as a general rule very selfish. When one applies for an assistancy he has to give references and testimonials as to character, &c., but is not to expect anything of that nature from the principal either as to himself or his wife, who sometimes "rules the roost," and regards the assistant as a "bottle-washer." The qualified assistant if he is expected to do his work in an efficient manner must be made comfortable in every sense of the term and neither have, as I have had, caterpillars cooked among his vegetables nor flies served among his beer, &c. I was in another situation where my sitting-room was the consulting-room, where many rough and dirty patients left their trace behind them, and the same butcher-meat appeared day after day till at last it appeared with the ribs exposed like the hulk of an old wreck one has seen thrown upon the beach. Yet, forsooth, this may be one of the principals who cannot get an assistant either through friends or agents. I likewise would like to see the position of qualified assistants improved—in fact, a unity among them by which they would be enabled to know about principals, &c., for they as a class have a great deal to endure.

I am, Sirs, yours faithfully,
AN ASSISTANT.

June 29th, 1898.

SPANISH MILITARY MEDICAL SERVICES.

(FROM A SPECIAL CORRESPONDENT.)

THERE is nothing new in the idea of creating a laboratory for the manufacture by the State of the drugs, &c., needed by the army. A decree to that effect was issued during the reign of Philip V. It bears the date of 1737 and such a

laboratory was established at Melilla in the reign of Charles III. for the benefit of the troops in the Spanish African colonies. A ministerial order, dated April, 1787, sanctions the creation of similar laboratories at Malaga and at Madrid. The Malaga laboratory was the first to be completed and it remained in its original premises till the year 1888, when it was removed to a more commodious building. The Madrid laboratory was established at the end of last century in a private house in the Calle St. Bernardo and rendered great service during the War of Independence. Nevertheless this valuable institution was closed when the war was over. On April 5th, 1853, a new set of rules were published relating to the sanitary services of the army. These rules prescribed the creation of a laboratory and a central depôt of medicaments for the use of the army; but this official document did not amount to more than the expression of a pious wish. In 1873, however, what were called "executive regulations" were issued and reproduced the above project of a central laboratory. This was followed by a ministerial order directing that such an institution should be organised. It took, however, four years to carry out these instructions, for it was not till Nov. 26th, 1877, that the central laboratory and medical depôt of the military sanitary services was opened in the Calle de la Isla de Cuba, close to the Montaña Barracks. This was at first a very modest establishment, for the initial expenses only amounted to £1326. Medicaments were sent from this centre to the military hospitals in Spain and in the African colonies. Good work was done, and the services rendered were so obvious and the economies realised so great that all the authorities concerned gave every encouragement. Better appliances were purchased, a more numerous staff was employed, and early in 1885 much larger premises were obtained in the Calle de Amaniel. The laboratory during the first seventeen years of its existence cost 574,132 pesetas in building, &c., 150,589 pesetas in material, machines, and apparatus. The ground which it covers measures 2071 square metres and there is an annexe measuring 365 square metres.

The Central Laboratory now purchases the raw material and manufactures all the medicaments, drugs, chemicals, &c., required for the land and sea forces and their officers as also for the prisons of Spain and of all the Spanish colonies. The result has been a considerable reduction in the Budgets of the Ministers of War, of Marine, of the Colonies, of Justice, and of Public Worship. But apart from these public services arrangements were made by which generals, superior chiefs and officers of the land and sea forces can purchase from this State laboratory, either for themselves or their families, any medicaments they might need. This trade with the officers has yielded a profit during the first seventeen years of 423,543 pesetas, which has in great measure defrayed the expenses of installation. But this is nothing when compared with the immense saving in the purchase of medicaments for the army and navy. As already pointed out when dealing with the sanitary services of Cuba the economy effected in that colony since 1894 amounts to 5,766,722 pesetas. The cost of what was sent out from the central laboratory to Cuba amounts to 3,059,456. Had these medicaments, &c., been purchased in Cuba they would have cost 8,826,248 pesetas. A few figures will best illustrate the rapid growth of this institution. Thus in the year 1882 the amount of subnitrate of bismuth prepared weighed 110 kilogrammes. In the year 1896–97 the laboratory prepared 2000 kilogrammes of this medicament. In 1889–90 salicylate of bismuth to the extent of 25 kilogrammes was prepared; in 1896–97 the supply of this one article was equal to 1200 kilogrammes. At first but few powders were supplied to the hospitals. The laboratory did not possess the mechanical means of manufacturing them. The necessary machinery was obtained towards the end of 1893. In the following year 1639 kilogrammes of powders were produced. This production increased in the year 1898 to 12,309 kilogrammes of all sorts of powders.

To produce all these drugs there are two laboratories for the preparation of chemical products—one laboratory for special articles, such as trisulphides, alkaline solutions of tar, &c.; and a laboratory for what are called "specialities" such as pastilles, lozenges, granules, dragées, pills, &c. Then there is the machine gallery, which was installed in 1893. It is a large glass and iron hall containing a 12-horse power generator, retorts, evaporating apparatus, a 10-horse power horizontal gas engine, iron mechanical mortars, pulverisers, sifters, grinders, hydraulic presses, centrifugal motors for drying or precipitating crystals, extracting apparatus, &c. All these machines have been purchased from the best firms, and especially from French and German manufacturers. There is a department reserved exclusively for the packing and labelling of the medicaments and here some 6000 to 7000 different parcels are sent off every month. Then there is a laboratory for analyses, where all the products purchased are examined and tested so as to make sure that none but the purest drugs are employed. Water, pathological specimens, urine, &c., are also analysed in this laboratory, and altogether from 800 to 1000 analyses are made here during the course of twelve months. It has further been necessary to provide large warehouse accommodation to stock all the medicaments, &c. These amounted for the year 1896-97, if estimated in weight, to no less than 616.254 kilogrammes. Then finally there are the offices where the accounts and the ledgers, &c., are kept and made up.

In the annexe, situated in the Calle de Amaniel, the antiseptic dressing for wounds is prepared. This is quite a new installation and it was opened in August, 1897. The work had been done previously with considerable difficulty for want of proper apparatus. In June, 1895, the laboratory received orders to prepare the small packets of bandages which are supplied to each soldier, and which had previously been bought from private manufacturers. In the course of two years the laboratory produced 189,000 such packets, and these were so well arranged and of such good quality that they have been officially recognised as the best ever given to soldiers. Each packet must measure 11·5 centimetres in length, 7·5 centimetres in width, and 2·8 centimetres in thickness. It consists of a pocket or bag made of a waterproof tissue to which a printed label is affixed outside. This label replaces the card of identity which in several armies soldiers have to carry with them. The contents, to still further protect them and keep them clean, are wrapped up in a parchment-like piece of paper on which is printed a description of what the contents are and how they are to be employed. Finally, two pieces of cardboard impart stiffness and a regular fixed shape to the parcel. The contents consists of two compresses of absorbent cotton each weighing 2·5 grammes, two absorbent gauze compresses measuring 14 by 20 centimetres, two pads of absorbent cotton, a protecting piece of 20 by 25 centimetres in size, a gauze bandage 5 metres long and 6 centimetres wide, a triangular handkerchief, and two ordinary and two safety pins. One important consideration is the fact that this packet only cost 77 centimes, or about 7½*d.*, to produce. But to make them quickly and cheaply it was necessary to purchase two machines so as to cut the cotton and gauze. Now that these machines are installed in separate and special premises the bandages can be prepared with great celerity and economy.

The manufacture by the State of the medicaments, &c., required for the army and navy, though admitted in principle some 150 years ago, has only recently been carried out on a large scale. The creation, however, of central depôts for all objects required by the military medical services is far more ancient. Such depôts existed at the times of the wars against the Moors and when Ferdinand and Isabella besieged Granada. To come to modern times, it was in 1853 that the establishment under one single manager of a central depôt was sanctioned. This was the commencement of the present organisation, and it was not in working order till six years later. Previous to that date the various army corps dealt directly with private purveyors and formed local depôts. What was thus purchased differed in nature and in quality, and there was no uniformity in the medical supplies of the army. During the African war of 1859 the first serious effort was made to enforce uniformity, and for this purpose a central depôt was established in the abandoned chapel of the old military hospital. Here were made the first stretchers. These were copies of the Austrian model and were sent to the seat of war. A Spanish model for stretchers was subsequently adopted. The chapel soon proved too small to store the various things required, and the central depôt was transferred to a private house in the Calle de Quiñones. Here there was more room to work at the manufacture of what is required for the ambulances or the transport of the wounded. A few ambulance waggons were constructed, as also boxes, &c., for portable pharmacies, surgical instruments, &c. In time it was again necessary to remove to larger premises, and on this occasion the old San Francisco barracks were selected. Finally in 1890 there was another removal to a still larger *locale* in the Calle de Palos de Moguer. The objects accumulated in this depôt are divided into three categories. First there is the

material required by an army corps for the care of the sick and wounded in war; secondly, the material suitable for an army corps on the peace establishment; and thirdly, the material necessary for the practical and theoretical instruction of all that relates to the ambulance and medical supplies required by an army. There is a technical committee for purchasing what is needed and for studying and testing all new inventions relating to these services. By the law of Aug. 30th, 1896, a special credit was sanctioned for military constructions, such as transportable field hospitals, ambulance waggons, and other means of transport for the sick and wounded and for the purchase of the most recent and improved surgical appliances. In course of time it is proposed to provide better portable stoves for baking bread and for cooking. Then it is also intended to construct branch establishments in various centres, receiving their supplies from the central depôt. For instance, at present the various local military hospitals have surgical instruments which have been purchased from time to time just as the opportunity or necessity arose. Some of these instruments may be of good make and quality, but many of them are undoubtedly very antiquated. In time all surgical instruments will be provided by the central depôt, where the most recent and best models alone will be manufactured or purchased. A military surgeon will thus wherever he goes find the same instruments; and this uniformity will be of great advantage in the surgical clinics. This uniformity will also bring about an economy of some 15 per cent. in the purchase of instruments. Instead of buying one instrument for one hospital a wholesale purchase of the same instrument for all the hospitals can be made and the above discount obtained on the quantity.

In connexion with the military medical services the Pathological and Anatomical Institute should likewise be mentioned. It was necessary to provide military surgeons with facilities for study and to encourage original researches. Means were to be supplied to test and to verify the importance and exactitude of all recent discoveries relating to the medical and surgical treatment of soldiers and sailors. The narrow compass of the old laboratories barely sufficed for this purpose. A Royal decree of Jan. 14th, 1885, approved the creation of an histological military laboratory. In bacteriological and chemical analysis this new institution soon rendered many practical services. In regard to hygiene and to many medico-legal questions the laboratory was also very useful. Consequently in 1888 a Royal order was issued enlarging the laboratory, to which a museum was attached, and it was henceforth called the Military Pathological and Anatomical Institute. Young army surgeons now follow a course of lectures and studies at this institute for six months and during that time they have opportunities of making original researches. But in 1889 when a portion of the old military hospital was destroyed by fire no less than 1450 anatomical specimens and wax models were consumed in the flames. Thus in a few moments the labour of years and a most valuable collection were irretrievably lost. Other dependencies of the institution were also much damaged, and a part of the library was only saved at great personal risk. The library has since not only been reconstituted but has been considerably enlarged and improved. It will take, however, many years before the new museum can compare with what existed before the fire. One of the most practical services rendered by this institution has been to study and improve all the services relating to vaccination and revaccination in the army. A special building was obtained for the production of calf lymph and its preservation in glycerine. The work that this has occasioned was particularly heavy in consequence of the mobilisation of large contingents of troops for service in the colonies. But the war, while entailing extra work, deprived the institute of many of its professors and students who were obliged to go to the front, and several of the members of the institute lost their lives in the colonial wars, notably Dr. D. Ramón Alba and Dr. D. Manuel Andrés. In spite of the loss of these professors, the researches, the teaching, the experiments and analyses were pursued with undiminished vigour, but not without entailing great fatigue and exertion on those who remained. Among other things no time was lost in utilising the discovery of the x rays for military surgery.

The studies pursued at the institute are divided into four sections. The first comprises all that relates to military hygiene and the preparation of vaccine-lymph; the second, descriptive anatomy, pathological topography, the manufacture of wax and other models for the museum; the third, pathological, chemical, and bacteriological history and chemical analysis; and the fourth, the spectroscope, radiograph, fluoroscope and micro-photography in their application to the medical sciences. After the fire at the old military hospital it was proposed that the institute should occupy one of the pavilions of the new Military Hospital now built at Carabanchel. But the services rendered were so great that it was finally decided to extend the scope of action of the institute and for this purpose it is proposed that in future it should be known under the more general term of the Institute of Military Hygiene. A scheme has been prepared by which 3780 square metres of the site of the old Military Hospital shall be set aside for the erection of a building planned expressly for the purpose and provided with cellars destined for the better preservation of lymph, serum, &c.

The Spanish Red Cross Society is constituted on the same basis as similar organisations existing in other countries and therefore in full agreement with the International Geneva Convention of Aug. 22nd, 1864. A Royal order issued by the Ministry of War called upon the Order of St. John of Jerusalem to organise the Red Cross Society for Spain and the rules and regulations then drawn up received Royal sanction in July, 1868. In 1874 the Red Cross Society was recognised by a special decree as the only authorised auxiliary to the regular medical services of the army. A Supreme Assembly, with its headquarters in Madrid, Calle de los Huertos No. 11 bajo, represents the society. It also possesses central commissions at Havana and at San Juan de Puerto Rico. Then there are provincial commissions in all the principal towns. The ladies' section has a similar organisation, and this institution was admitted as forming part of the International Red Cross Confederation by a circular of the Geneva Committee issued on June 6th, 1893. The uniform worn is recognised by Royal decree, and His Holiness the Pope, Leo XIII., granted on Dec. 9th, 1893, a plenary indulgence *in articulo mortis* to all its members. The Spanish Red Cross Society assists not only the sick and wounded in war, but also all who are the victims of some public calamity or accident. During the Carlist war in the North of Spain it rendered great services, and it was also the first to organise a maritime ambulance at the time of the cantonal insurrection at Carthagena. It further sent a fully equipped ambulance to Melilla during the recent war in Morocco. To Cuba and the Philippine Islands the Spanish Red Cross Society has likewise despatched an enormous amount of ambulance material and has established hospitals at Colon and Cardenas in Cuba. In the course of the first two years of the Cuban insurrection members of the Spanish Red Cross Society have nursed about 15,000 soldiers in the hospitals and some 25,000 on the battlefield and in temporary shelters or ambulances. The society also paid for several burials. It has spent about a million pesetas (£40,000) and has received gifts in kind worth about a third of that amount. Further, the society established at Madrid a sanatorium called the Hospital de Villa Hermosa, which was inaugurated in February, 1896. Here during the first two years 4461 soldiers were nursed and 16,237 medical prescriptions made up. His Excellency Lieutenant-General the Marquis of Polavieja is the President of the Spanish Red Cross Society.

From all these details it will be seen that some considerable progress has been achieved in Spain of late years in respect to the medical services connected with the army and the navy. What is more particularly remarkable is the fact that these reforms, far from involving a large outlay and thus tending to increase taxation, have, on the contrary, in some cases been a source of direct income and in other cases a means of effecting a great saving of expenditure.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Curative Serums for Plague.—The Propagation of the Disease.—Reports of Outbreaks.

THERE are two forms of curative serum for plague now being tried in India—one prepared by Professor Lustig which was introduced last year and gave some promise of success, the other by Professor Roux. The method of preparation

of the former has already been published but that of the latter is kept a secret until the results are considered to justify its publication. I shall look with great suspicion on any statistics which may be given from these experiments. In the first place, cases have been selected and in the second case the investigations have been chiefly carried out in a declining epidemic, when the virulence of the disease is less and the mortality lower than at any other time. When I say the cases have been selected I do not mean to infer that only the mild attacks have been chosen for inoculation, but that the cases have not been taken in the order of admission to hospital. As by a rough estimate it is probable that 30 per cent. of cases admitted to a plague hospital die within 24 hours and perhaps another 20 per cent. within 48 hours the importance of my contention is obvious. The later results with Professor Lustig's serum of greater strength are reported to be much more promising. These experiments are being carried out at the expense of the municipality of Bombay and it shows the active scientific enterprise and spirit of the corporation in that they have just voted more money for still further investigations. They are certainly doing a public service by offering these facilities for experiment during the present opportunity.

The evidence for the part played by the rat in the propagation of plague is gradually accumulating. At Karachi it has been a comparatively common observation for the occurrence of a case of plague to be preceded a few days by the finding of dead rats. This was particularly noticed in the first two or three cases of the present outbreak. The finding of dead or dying rats has now become the signal to clear out of any dwelling. Mice and cats have also been found to suffer from plague. Although so much attention is given to the disinfection of clothing the evidence that the contagion is ever conveyed by this means is very doubtful. The conveyance of infection by infected rats in grain-bags is much more probable as dead rats have been found among the piles of imported bags. As nearly every house in an Indian town is honeycombed by rat-runs and as the disease is very virulent in this species of animal, it is reasonable to assume that it is by their means that the disease is extensively if not chiefly spread. It is very certain that contagion from the sick to the healthy only accounts for a small proportion of cases. There is some evidence to show, however, that the so-called pneumonic form is more infectious than any other.

The number of cases reported in Calcutta is gradually increasing. The great exodus of people and perhaps the hot season may have combined to postpone its spread. The people are beginning to get over their fright and are said to be returning to Calcutta. They are also learning to see that the sanitary measures adopted when a case of plague is discovered are not so dreadful as they supposed. There are some signs also that inoculation will meet with more favour. Even in Bombay, however, less than 20,000 people have been inoculated, so that unless it be taken up on a very large scale it will have little or no effect on the progress of the epidemic. In Bombay the plague is almost extinguished and the average weekly mortality is nearly reached. In Karachi it is also very rapidly diminishing, the majority of the cases which are now occurring being found in the outlying camps. There is very little elsewhere.

June 9th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Infirmary Question.

THE question of the future of the Manchester Royal Infirmary is at present in a state of suspended, but only suspended, animation. Some short time ago it was intimated to the corporation, in answer to an inquiry as to the willingness of the infirmary authorities to sell the whole of the site in Piccadilly, that they were not willing to do so. At the meeting of the city council on June 8th, Sir John Harwood said he did not think anyone was satisfied with the present position of affairs. The alternatives seem to be either such an extension of the present site as to give space enough for rebuilding the infirmary on an extended scale or the sale of the whole of the site and the removal of the hospital to the suburbs. At present the latter idea does not find favour with the board, but it is possible that the enlargement of the power of dealing with the Owens College hospital estate recently received by the council of the college from the Charity Commissioners may before very long lead to a reconsideration of the question. By these powers the college can "alienate by conveyance or long lease" the hospital estate "to any person or persons, corporation or corporations, who may be willing and able to undertake to establish and maintain a hospital or hospitals upon the same land or part thereof, subject always to providing and securing to the medical school of the Owens College all requisite facilities for instruction," and also subject to safeguarding the provisions made in 1892 for the treatment of cancer. This arrangement would, in the event of purchase, allow of the new hospital being the actual property of the infirmary trustees, subject to conditions which would not be felt as a burden. The alternatives will no doubt be considered in all their bearings and a wise decision may be looked for some time or other. We must hope that it will be in the near future, for the infirmary is being worked at high pressure and much avoidable suffering is the result.

Grocers and Boric Acid.

There is a good deal of anxiety among grocers and milk-dealers as to the use of boric acid as a preservative for butter, bacon, milk, &c., and on June 9th a deputation representing some of the principal grocers of Manchester and Salford waited on Alderman Walton Smith and other members of the sanitary committee of the Manchester Corporation and requested them not to prosecute retail traders just yet. The committee were asked "not to take any active steps in the way of prosecuting retailers of bacon and butter preserved with boracic acid but to stay their hand until a standard has been fixed by the medical authorities connected with the Board of Trade." If the time for fixing this standard is calculated at the customary rate of departmental progression the users of boric acid may hope for a long innings. The deputation pointed out that there was "a great conflict of medical opinion" as to the wholesomeness or otherwise of boric acid as a preservative and said that it had been in use for twenty years without any injurious effects so far as could be ascertained. The committee promised to give the matter their serious consideration but could not make any definite statement as to the course which would be adopted. It is said, by the way, that thoroughly well-made butter—a comparatively rare article perhaps—will keep a fortnight even in hot weather without any artificial admixture, so that the acid is no doubt often used to cover the carelessness which causes an inferior make. At the Chester police-court the other day a farmer was summoned for selling milk mixed with boric acid. The city analyst had certified that "the sample contained boracic acid to the extent of six grains per pint, which quantity would be injurious to the health of young children." It was stated for the defence that it was used in ignorance and that "the defendant put the powder in the milk to preserve it on the assurance of a chemist's commercial traveller that it was not injurious and was allowed by Government." Some check might with advantage be placed on the persuasive eloquence of commercial travellers. It is quite time that if anything is really known as to the effects of the continued use of boric acid in small doses it should be authoritatively set forth and the law as to its employment be clearly stated.

Lamp Throwing at Hyde.

Some folks may be glad to know that at the neighbouring town of Hyde the amusement of throwing lighted paraffin lamps at your wife—probably if at anyone else it would cost more—may be indulged in at the moderate charge of half-a-crown. It is much less expensive than golf. John William Hague has proved this, for on reaching home late at night on June 11th, having previously taken care to get drunk, he began to abuse his wife and as she ran to the door to escape into the street he picked up the lighted paraffin lamp from the table and threw it at her. Fortunately his aim was faulty, but the lamp struck the door and was smashed to pieces, part of it flying into the street. Happily the flame went out in its flight and no further mischief followed. When taken before the magistrates he was fined half-a-crown and costs, and the chairman in reprimanding him made the incontestable remark that lamp-throwing was dangerous, adding moreover that "it would pay him best not to indulge in it any more." One of the other magistrates told the

prisoner he might have been "before the bench" for manslaughter. He got off cheaply, for these hard words broke none of his bones, but no doubt the cost of the game may rise as it will vary according to the magistrates' views of sport. It does not seem that any addition to the fine was made because the man was drunk, so that it may be asked if it is considered the normal condition at Hyde for the "lords of creation" to be drunk on a Saturday night. No doubt the British working man deserves much of the good that is said of him, but there are exceptions. A drunken Englishman is always a nuisance and too often a dangerous brute to whom such punishment as that inflicted at Hyde is a joke and an incentive to continue the game.

June 21st.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Glasgow University.

IT is officially intimated that Her Majesty the Queen has been graciously pleased to signify her approval of the appointment of the Rev. Dr. Story as Principal of the University in succession to Principal Caird, resigned. Dr. Story has been Professor of Ecclesiastical History in the University since 1886; he is one of the Queen's chaplain's and principal clerk to the General Assembly of the Church of Scotland. The University Court have sent a letter to Principal Caird expressing their regret at his resignation and their high appreciation of the ability and devotion he has for so many years displayed in the service of the University.—It has been decided that the classes of Materia Medica and Therapeutics at Queen Margaret College shall next session be conducted by a specially appointed lecturer and applications for the position are invited by the Court.—The final examinations for degrees in medicine come to a conclusion this week and the list of successful candidates will be issued in a day or two. The session at the Royal Hospital for Sick Children was closed on June 27th by an address from Professor McCall Anderson. Prizes for excellence in clinical work were awarded to Mr. D. S. Harvey and Mr. A. S. Wells.

Glasgow University Club, London.

The members of this club dined together at the Café Royal on the evening of June 22nd. The chair was taken by Professor William Macewen, F.R.S., who met with a most hearty reception from the large assemblage met especially to do him honour. The toast of the chairman was proposed by Dr. Heron in a very neat and witty speech and was enthusiastically received. Professor Macewen, in reply, gave a number of very interesting particulars concerning the origin of the antiseptic system in Lister's wards in the Glasgow Royal Infirmary and expressed his personal indebtedness to Lister's work and stimulus. The dinner was in every sense a great success.

Hospital Saturday in Aberdeen.

Last Saturday was "Hospital Saturday" in Aberdeen. As usual the friendly societies took charge of the movement. The usual procession to Duthie Park and sports took place, and the committee expect to have a surplus of £1000.

The Sanitary Inspectors' Association.

The annual Congress of the Sanitary Inspectors' Association of Scotland was opened in Perth on June 24th under the presidency of Mr. Kenneth Cameron of Aberdeen. Mr. Cameron's inaugural address was an excellent one. An interesting paper on Sanitation in Perth, 1868 and 1898, was read by Ex-Baillie Alexander, Convener of the Public Health Committee of Perth.

June 28th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Conjoint Examinations in Ireland.

THE Secretary of the Committee of Management of the Conjoint Examinations of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland has recently made a public announcement addressed to possible candidates for the preliminary examinations to be held during the year 1899. Candidates are informed that considerable changes have been made in the course and are referred to the secretary, Mr. Greenwood Pim, M.A., for particulars.

The Royal Irish Academy.

At a meeting of the Royal Irish Academy held on June 13th the President, the Earl of Rosse, K.P., occupying the chair, Mr. William Frazer, F.R.C.S. Irel., was elected a Member of Council and Librarian in the room of the late Sir John Gilbert.

The Royal Hospital for Incurables, Dublin.

A meeting of the Board of the Royal Hospital for Incurables was held on June 21st, Sir William Fry occupying the chair. A strong resolution expressing the loss which the institution has sustained in the recent death of Mr. Edward Fottrell, for so many years an acting governor of the hospital, was passed unanimously.

The Belfast Union Workhouse.

The Special Committee of the Belfast Board of Guardians, which had been appointed to take into consideration the report furnished by the Local Government Board Inspectors,[1] have replied that they were of opinion that the deficit at the end of the present financial period would not exceed £10,000. Having conferred with Dr. Bigger they were of opinion that the hospital staff should consist of 9 trained and 11 probationer nurses. With reference to Mr. Agnew's remarks about the quality of the beef supplied to the inmates they believed that it was in accord with the terms of the contract which required that it should be supplied from "fair finished beasts." At a meeting of the guardians held on June 21st the report of Mr. Agnew was read in reference to the inquiry into the treatment of a child. The report stated that a serious and lamentable neglect of duty had occurred on the part of the nurse and medical man in charge in facilitating and sanctioning the discharge of the child from the infirmary until they had satisfied themselves by an interview with the mother that she had thoroughly understood what the condition of her child was and that she having such knowledge insisted upon taking her child out of the infirmary. They thought both the nurse and medical man should be censured and this course was acted upon by the board of guardians, who called before them the nurse and medical man and reprimanded both.

Monaghan and Cavan Asylum.

Some time since the governors of this asylum wrote to the Monaghan guardians for the temporary use of the vacant wings of the workhouse for the accommodation of harmless lunatics and the guardians agreed to do so provided the Local Government Board concurred. The Local Government Board, however, would not sanction the arrangement. The governors, at their meeting on June 22nd, having considered the necessity for additional accommodation owing to the extremely overcrowded condition of the asylum, resolved that steps should be at once taken to put up an auxiliary building sufficient to accommodate 120 patients, together with such additions as may be absolutely required for sanitary and cooking purposes, at a cost not exceeding £5000.

Newcastle as a Health Resort.

For strangers visiting the north of Ireland there is no more beautiful health resort than Newcastle. Situated at the foot of the Mourne Mountains in co. Down it commands the most lovely charms of mountain, sea, and wood, and from a tourist's point of view its value and comfort have been immensely enhanced by the erection of a new hotel which was opened by the Countess of Annesley on June 21st. From a medical point of view Newcastle is mild, comparatively dry, and it affords great varieties of sea and mountain air; and there are beautiful coach drives in the district as well as in the neighbouring noblemen's parks, while close to the hotel, exposed to the bracing sea air, there are as fine golf links as are to be found anywhere. Newcastle is about one hour's run from Belfast by train, while on the other side it can be approached by drive from Warrenpoint along a most delightful and bracing stretch of country.

June 28th.

[1] THE LANCET, June 18th, 1898, p. 1723.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Serum Therapeusis in Mushroom Poisoning.

THE possibilities of serum therapeutics are by no means exhausted, for every day sees some new application. A case of poisoning by mushrooms has afforded M. Claisse the opportunity of trying a treatment the details of which he laid before the Society of Biology at the meeting of June 18th. It is well known that two widely different substances take part in this kind of poisoning. The one, muscarine, brings about violent gastro-intestinal disturbances; the other, phalline, is more subtle and more alarming and both the guinea-pig and the rabbit are very sensitive to its action. Five milligrammes of powdered amanite per hectogramme will kill a guinea-pig if injected under the skin. M. Claisse, however, demonstrated that immunity is very quickly established and that after 50 days a rabbit will easily support a dose of triple the ordinary fatal strength.

Retention of the Placenta in Abortion.

At the meeting of the Obstetrical Society held on June 9th M. Loviot reported the case of a patient in whom after having aborted the placenta was retained for 101 hours. The general condition of the patient being satisfactory and the after-birth being everywhere adherent M. Loviot determined to adopt an expectant treatment. He give intra-uterine injections of permanganate of potassium and administered one grain of sulphate of quinine in the 24 hours, a drug well known to be an excellent oxytoxic and one which has an advantage over ergot in that it does not cause tonic contraction of the uterus. Contractions were soon set up and the placenta was expelled. M. Loviot considers that in cases of this kind the use of corrosive sublimate must be guarded against, for it is very easily absorbed, the placenta acting as a sponge.

The Dental School of Paris.

The council of the Dental School and Dispensary of Paris, the committee of the Paris Odontological Society, and the council of the General Association inaugurated on the evening of June 25th the new buildings of the Dental School of Paris. After the establishment had been inspected a banquet followed, Dr. Lecandey, the honorary president of the association, being in the chair. The following morning there was a meeting to consider the forthcoming Congress of 1900, also a clinical meeting of the Odontological Society, and the prizes and diplomas for the scholastic year 1896–1897 were distributed to the pupils of the school.

The Bacteriological Laboratory of the Prefecture of the Seine.

The monthly report of this laboratory for May shows that 267 specimens were submitted for diagnosis. There is a remarkable diminution in the figures for material from doubtful cases of diphtheria sent in, but the percentage of undoubted diphtheria is almost the same as that of the preceding month—namely, 12 per cent. The diphtheria mortality continues to steadily diminish. For the month of May, 1897, there were 21 fatal cases, while during the corresponding month of 1898 there were but 15. Of 106 examinations made during May for other diseases 93 dealt with material suspected to be tuberculous and in 38 of these the bacillus of Koch was found. Although suspected cases of diphtheria are becoming fewer suspected cases of tuberculosis continue to be sent up in increasing numbers.

Glycosuria in Wet Nurses following the Administration of Somatose.

Glycosuria is not uncommon in wet nurses and so M. Renon in attributing this condition to somatose, as he did at the Hospitals Medical Society on June 17th, has probably been misled by a mere coincidence. The case in question was that of a wet nurse aged forty years. It is well known that Dreux and Joachim have shown that the ingestion of somatose is an admirable way of increasing the flow of milk and Renon has administered it to this end with great success. In the case reported by him the urine at the end of the three weeks contained sugar to the amount of 3 grammes to the litre. Upon the somatose being left off the urine became normal. There is one fact which goes to show that the glycosuria was a direct consequence of the somatose—i.e., that diabetics pass more sugar when they eat meat; such, at least, was the result of some observations by Naunyn and Lepine. Might the glycosuria in this case, however, not be due to the over secretion of milk—that is, as Lecorche has shown, be due to the absorption of some of the sugar secreted by the breasts? The somatose in that case would have gone beyond its duty by increasing the milk too much. M. Legendre declares that for his part he has never seen a parallel case.

Obituary.

On the morning of June 21st Dr. Genouville, who had been visiting a patient, fell from the fourth floor of a house into the courtyard and was instantly killed. He was in his sixty-first year and was treasurer of the Association of Medical Men of the Seine. An inquiry will be held.—Dr. Auguste Felix Voisin has recently succumbed to anthrax. He was the son of a physician and was born at Paris in 1829. He graduated as Doctor of Medicine in 1858 after having served as *interne* at the hospitals. He was physician at Bicêtre where he studied mental diseases. He was a member of the Anatomical Society, of the Medical Observation Society, of the Medical Society of the Seine and of the Council of Hygiene and Public Health. In 1869 he became connected with the Salpêtrière. Among the many works upon mental diseases which he published may be mentioned, "The Mental States in Alcoholism," "On the Curative Treatment of Mania," "A Treatise on General Paralysis in the Insane," and he was many times rewarded by the Academy of Medicine for his scientific work. Dr. Voisin was in addition *officier* of the Legion of Honour.

June 28th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Professor Koch on Malaria.

AT the last meeting of the Berlin Colonial Society, Professor Koch, who has recently returned to Germany after a long absence in India and South Africa, read a paper on Tropical Malaria. There was a large attendance of members and visitors belonging to the medical profession, who received Professor Koch with loud applause on his entrance, and although he spoke on medical subjects before a mixed audience his hearers listened with the greatest attention for the two hours during which the proceedings were continued. He said that malaria is the specific disease of the tropics; it is the most terrible enemy there is to contend against in these regions, and the full advantages of the colonies will not be realised until it is overcome. The first step in meeting it is to know how it arises. For this purpose Dr. Koch has investigated a tropical disease of cattle which is somewhat like malaria. This disease is the so-called Texas fever, the cause of which has been stated by Smith to be a parasite—parosoma bigeminum. The parasite is present in the blood of the animals and its germs are spread by insects called "ticks." Cattle coming from the north only catch the disease when ticks have access to them. Professor Koch, to verify the statement of Smith, made the following experiment. He collected ticks from healthy as well as from sick cattle and took them to a distant place where Texas fever had never yet occurred. Healthy cattle were then inoculated with the eggs of ticks of both categories, the results being that the eggs obtained from sick animals gave Texas fever to the inoculated cattle, whereas the eggs from healthy animals produced no effect. Cattle reared in places where the fever was endemic did not always show this reaction, apparently because they had suffered from it when young and had therefore become immune against it. Some of them became infected, but in a slight degree only. It is thus possible to obtain an artificial immunity against Texas fever. Malaria, like Texas fever, is caused by parasites in the blood. Laveran and some Italian pathologists detected in the red corpuscles a specific parasite which is very motile and grows somewhat quickly. The climax of its development coincides with the maximum temperature during the fit and it afterwards breaks up into spores which again invade other corpuscles. There are two clinical forms of malaria; one, occurring in Europe, is characterised by a regular course of fever, as quotidian or tertian malaria, the second or malignant form, which only develops in hot climates, shows a very irregular temperature. The relation of the parasites to the different kinds of fever has not yet

been ascertained. There was no strict indication in the treatment of tropical malaria, as quinine was given at random without considering at what time it might be most efficacious. As a rule it was taken in divided doses throughout the whole day. By microscopical investigation Professor Koch has now discovered that quinine will most surely overcome the parasite at the period preceding the above-described sporulation. The time when quinine must be taken is thus to be determined in the individual case by microscopical examination of the blood, and Professor Koch called special attention to the fact that quinine administered at the right time is able to cure the disease. When the fever has ceased one gramme of quinine must be administered every five days for two months. Blackwater fever, in his opinion, is not due to malaria, as parasites have never been found present in these cases, but is the result of a toxic effect produced by quinine. With respect to the mode of infection Professor Koch said that various conjectures have been made, but nothing is definitely known, and it has not been ascertained how the parasite enters into the blood of the patient. There is no direct infection from one person to another, the malady not being contagious, and infection by air or water is not likely. Diseases, however, are known in which infection is conveyed by insects, as in Texas fever, and it is remarkable that there is no malaria where there are no mosquitoes. This is, for instance, the case in some islands near the African coast and in the Usambara country. The mosquitoes probably deposit their eggs on the human body, the parasites issue from these eggs, and when their number has increased the disease develops. The time of incubation is about ten or twelve days. As to immunity Professor Koch is of opinion that persons who have once caught malaria and have recovered spontaneously without quinine possess a certain degree of immunity. The natives of the coast, who never catch malaria, owe their immunity to the circumstance that their ancestors have passed through the disease. If, therefore, a natural immunity is possible it may be hoped that means of producing artificial immunity may be discovered some day. The measures which have hitherto been used against malaria, such as draining of marshes, planting of eucalyptus trees, and establishment of sanatoria in mountain districts, have failed. What is wanted is to teach the medical men in the colonies how quinine should be given and to construct the dwellings of the Europeans so that the mosquitoes may be kept off. In conclusion Professor Koch said: "When we are able to destroy malaria in our colonies we shall have peacefully conquered one of the most beautiful and fertile countries of the world."

June 28th.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

Medical School.

A PRELIMINARY list of teachers, mostly already connected with Kasr el Aini Hospital or school has now been sent to the Council of Ministers for their formal approval. After October, both the hospital and school will be controlled by one director aided by two committees. The school, as now, will consist of four sections, male medical, female medical, pharmaceutical, and veterinary. The summer examinations have just ended, so that it may be seen how many students the new staff will find after the holidays. The fourth and final year will consist only of 7 students on the male medical side, the third year will only have 5, but the second year will muster 15, and for the entrance year there are already 12 applications. All candidates for admission must have the secondary certificate. This year there is great tribulation on the French side of the secondary schools, because they have been well beaten by the English side at the final examinations. The test must have been severe, for only 98 passed out of a total of 344. French is still the dominant language in the Government schools, to our shame be it said! In the primary schools, where the parents of the boys must first choose the prevailing language, 51 per cent. learn English and 49 per cent. French. But in the secondary schools the percentage is 63 French and 37 English. The animal stables attached to the medical school have now been finished in the most workmanlike and satisfactory way. They are already stocked with a limited supply of horses, donkeys, goats, dogs, cats, guinea-pigs, rats, foxes, and monkeys.

Infectious Hospital.

The pavilions and huts for infectious diseases in the desert continue to be most useful and probably they save Cairo from the smouldering of many small epidemics. At the present moment there are under treatment there 61 cases of relapsing fever, 2 of typhus fever, 1 of small-pox, and 2 of erysipelas. During the spring months there were 300 admissions of relapsing fever, mostly from the prisons, and 21 of these died. The greatest number of relapsing patients present on any one day was 130. As many as 7 of the attendants have caught the disease this year, but all recovered.

Vaccine Institute.

This establishment is gradually extending its usefulness and will shortly be able to supply calf lymph to the whole of Egypt. The receipts last year included £200 made by selling lymph to the Egyptian Army and to the Alexandria Municipality. Cultures of lymph come every week by post from Europe, but for the last two summers it has been possible to keep up the local supply. The secret of this success is that many more calves are now being used than in former years. It is still found that buffalo calves are much more susceptible and more certain in their results than cow calves. The institute last year provided lymph for about 50,000 vaccinations and 330,000 in the whole country were returned as having been successfully performed. However, no less than 2057 cases of small-pox were treated in the Government hospitals in 1897.

Statistical Returns.

A comparison of the two years 1881 and 1897 has lately been made by Sir E. Palmer to show to what extent Egypt has profited under British rule. A few figures from this return may be briefly quoted. The population of Egypt has increased by 43 per cent. The tobacco-tax now brings in over £1,000,000 instead of £97,168. This is partly due to the flourishing export trade in Egyptian cigarettes. Tobacco is the only tax which has been raised; many others have been reduced or abolised altogether. Two hundred and twelve miles of new railways have been opened and there is a huge development of railway and postal and telegraph traffic. The expenditure on public education has been raised by over 37 per cent. and the schools from 29 to 51. The number of forced men for corvée work is reduced from 281,000 to 11,000. The amount of debt per head of the population was £14 per cent. in 1881 and is to-day £10. Lastly, the 4 per cent. Unified Debt, which is the pulse-rate of Egyptian finance, was at £71 in 1881 and at £106 in 1897.

Cairo Tourist Season.

The last winter season was crowded enough to satisfy all the hotel keepers. About 7500 tourists, mostly English, Americans, and Germans, landed in Egypt between November and April. This number almost reaches the maximum year. Medically speaking the season was a very healthy one, slightly marred by dengue in the autumn, while in the spring, as in many past years, influenza was imported by patients from Europe. The weather was decidedly cold throughout, being the exact reverse of the winter of 1896-97.

Luxor Hospital.

This small hospital of 26 beds continues to do very useful work. It has been supported since 1891 chiefly by the subscriptions of tourists. The late Mr. Longmore took a great interest in its foundation and maintenance, and the winter work is now to be continued by Surgeon-Major Elcum. The hospital remains open during the summer months under the charge of a native medical officer, to whom patients travel from villages 200 miles above Luxor and from places almost 200 miles to the north. Every day there are about 20 new out-patients and the number of surgical and eye operations in the month averages 20.

Cairo, June 19th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Graduation in the Dental Department of the University of Pennsylvania.

IN order that the entrance requirements shall be in harmony with those of the other departments the University

will hereafter require the following preliminary education in the dental department: for the session of 1898 to 1899 a certificate of high-school entrance; for the session of 1899 to 1900, a certificate of two years of high-school attendance; for the session of 1900 to 1901, a diploma of an approved high school having a three years' course or a certificate showing three years' attendance at a high school having a four years' course or certificates from other schools showing equivalent education. In lieu of such diplomas or certificates the candidate will be required to pass a matriculation examination which shall be the equivalent of that necessary to obtain the certificates above mentioned.

Results of Treatment of Tuberculosis at Loomis Sanatorium.

This institution was established by the friends of the late Dr. Loomis for the treatment of persons suffering from tuberculosis. It is located about 100 miles from New York on the Catskill Mountains. From the report of the physician it appears that during the first year 8 per cent. of the patients discharged had lost their tubercle bacilli; during the last six months covered by the present report 18 per cent. of those discharged had lost their bacilli. During the first year 73 per cent. of those discharged had gained in weight, while during the last six months 81 per cent. of those discharged had gained in weight. During the first year 13 per cent. of the patients discharged were apparently cured, while during the last six months 23 per cent. of those discharged were apparently cured. Last year 10 per cent. were discharged with their disease arrested and during the last six months 9 per cent. It is interesting to note that of those patients discharged after a residence of three months or less at the sanatorium 17 per cent. were apparently cured, while among those who were discharged after remaining longer than three months 26 per cent. were apparently cured. This is a good object-lesson for those physicians who send their patients with the advice that they should remain six weeks or two months. The basis of treatment in all cases has been climatic and hygienic. The climate of Liberty and the site of the sanatorium are well adapted to the treatment of tuberculosis throughout the whole year, but there is even more marked improvement during the winter months than in the summer. The elevation, 2300 ft., is within those limits generally conceded to be most advantageous for lung troubles; this altitude with the peculiarly dry atmosphere and abundance of sunlight furnishes all the conditions necessary in the climatic and hygienic treatment of incipient cases of tuberculosis. Malarial fevers are unknown at Liberty except when imported. While strong winds are generally supposed to be detrimental to the class of patients under consideration they bear well cold and north-west winds. The experiences encountered and the results obtained during the two cold seasons at this sanatorium seem to tend to revolutionise the popularly accepted ideas of the injurious effect of winds and stormy weather upon incipient cases of tuberculosis. A good deal has been said and written against allowing phthisical subjects to walk or to exert themselves to any great extent, especially if their temperatures range above the normal point. It is a rule at this sanatorium to allow all patients whose evening temperatures do not reach above 100° F. to walk moderately and if their temperatures are not above 99° no restrictions at all are placed upon them in this respect, but they are encouraged to gradually accustom themselves to pedestrian tours extending from two to ten miles daily. In the way of specific treatment of individual cases creasote and its derivatives have been used. Of the different forms guaiacol valerianate has been more extensively used than during last year, as it is the form of this drug least irritating to the stomach which has been met with. Ichthyol in keratin-coated pills has been used with considerable success; this remedy seems specially beneficial in cases showing intestinal complications. In regard to the serum treatment 7 out of the 29 cases thus treated, or 24 per cent. of the cases, lost their tubercle bacilli and in 48 per cent. the bacilli decreased. In an examination of 15 cases treated by serum not one had redeveloped the disease; on the contrary, all have been enabled to remain in their homes and at their work.

Medical Aid during Action.

Dr. Spear, an assistant surgeon of the United States Navy on board the flagship *New York*, writes as follows on the duty of the surgeon during action: "When 'general quarters' is sounded aboard the U.S.S. *New York* the sick-bay is immediately converted into an operating-room; an operating-table is placed in the centre, the ordinary instruments for amputating limbs are arranged in trays and immediately disinfected by steam, aseptic dressings are laid out, and antiseptics prepared for immediate use. It becomes the duty of medical officers to take measures to stop all bleeding from wounds. To do this the crew of each gun receives instructions in first aid to the wounded by the medical officers. Each gun has its own outfit of rubber tubing and packages of aseptic dressings. The men are instructed how to apply the rubber tubings to the limbs in order to arrest hæmorrhage, how to apply aseptic dressings, being especially cautioned against touching wounds, and, finally, how to support limbs when broken and how to carry the wounded and where to place them. The medical men take their stations in the most protected parts of the ships—viz., behind the turrets—and here establish dressing stations and attend to all the wounded in the immediate vicinity. The surgeons have received orders to expose themselves as little as possible during action as their real work begins when the fight is over. Each surgeon carries a haversack in which are pieces of rubber tubing for controlling hæmorrhage from the extremities, hæmostatics, a pocket case, hypodermic syringe, and solutions of strychnine and morphine ready for hypodermic use, and some first aid packages. Stationed with each doctor is a nurse, who carries in a knapsack surgical dressings, antiseptic solutions, whisky, and so forth. When the action is over the surgeons will take a hasty survey of the wounded and give such attention as is absolutely necessary to each. When the wounded have been attended to those cases needing immediate operation will be looked after, three operating tables being established if necessary."

June 18th.

Obituary.

HENRY CASE, M.R.C.S. ENG., L.S.A.

HENRY CASE was born in London on June 28th, 1843, and spent his boyhood in West Herts. On leaving school he became the pupil of the late Dr. Ambler of Hemel Hempstead, after which he proceeded to Middlesex Hospital, from which medical school he qualified; becoming M.R.C.S, Eng. in 1867 and L.S.A. in 1868. He was appointed subsequently house surgeon to the hospital and as such he displayed an amount of zeal and efficiency which gained him golden opinions from all concerned. On leaving Middlesex Hospital he was appointed house surgeon to the West Herts Infirmary and this office he held for over three years. So thoroughly did he do his work that on resigning that office in 1873 to become assistant medical officer in the Metropolitan District Asylum at Leavesden, the Infirmary Board formally put on record their high appreciation of his services and expressed their regret at not having the power to mark their appreciation in such a tangible manner as they would have wished. After nearly three years' work as assistant medical officer at Leavesden he became medical superintendent of the Asylum at Hampstead under the same board, and shortly afterwards this asylum was converted into a small-pox hospital, which he managed with singular success. In the autumn of 1876 he succeeded Dr. Claye Shaw—the present medical superintendent of the London County Asylum, Banstead—as medical superintendent of Leavesden Asylum, which office he held until ill-health compelled him to resign in January last. For some six years after 1876 he was Lecturer on Psychological Medicine at the Middlesex Hospital, but finally he had to resign this appointment on account of the onerous nature of his daily work at Leavesden. He performed his duties at Leavesden with ability, tact, and rare vigilance—a vigilance so unceasing that his duty became alike his work and his hobby. He kept pace with current medical literature, displayed great diagnostic power and ripe judgment, and wielded a most humanising influence over his unfortunate patients, and his high qualities as gentleman and physician attracted to himself the ready obedience, respect, and love of his staff. Always of modest and retiring disposition it was only by those who came in daily contact with him that his conscientious labours and sterling worth were fully appreciated

but within the large institution which he administered so faithfully and so well and among his friends—who include his colleagues and all who knew him—the memory of his noble character and much loved personality will long remain. He leaves a widow to mourn her loss and to her goes out the respectful sympathy of all who loved her husband.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen having passed the necessary examinations have been admitted Licentiates in Dental Surgery:—

William Monro Anderson, Lewis Fryer Barton, William Henry Bean, Surg.-Capt., M.R.C.S. Eng., L.S.A. Lond.; Frank Russell Bishop, George Parminter Cardell, Alfred Eastland Carden, Harold Cardwell and Frank Coleman, Charing Cross and the Dental Hospital of London, Sidney d'Alton Corbett, St. George's and the Dental Hospital of London; Frederic Ledger Etheridge, St. Bartholomew's and the National Dental Hospital; Sydney William Garue and Zephaniah Job Gibson, Charing Cross and the Dental Hospital of London; William James Grewcock, Mason University College, Queen's, General, and the Dental Hospital, Birmingham; Hubert Malcolm Griffiths, Middlesex and the National Dental Hospital; John Harper, M.R.C.S. Eng., L.R.C.P. Lond., St. Thomas's and Guy's Hospital Dental Department and School; Herman Charles Hessenauer and Frank Holding, Charing-cross and the Dental Hospital of London; Reginald Crompton Holt, University College, Royal Infirmary and Dental Hospital, Liverpool; William Warwick James, Middlesex and the Dental Hospital of London; George Frederick William Jennings, Charing-cross and the Dental Hospital of London; William Henry Jones, Owens College, Royal Infirmary, and Victoria Dental Hospital, Manchester; Harry Percy Josselyn, Mason University College, Queen's, General, and the Dental Hospital, Birmingham; William Henry Loosely, Guy's Hospital, Dental Department and School; Arthur Robert Marks, St. George's and the Dental Hospital of London; Charles Ernest Mountford, Mason University College, Queen's, General, and the Dental Hospital, Birmingham; Edward Giles Narramore, University College, Royal Infirmary and Dental Hospital, Liverpool; William Nicholson, Owens College, Royal Infirmary, and Victoria Dental Hospital, Manchester; Charles Deane Outred, Guy's Hospital, Dental Department, and School; Alfred Mitchell Partridge, University College; Royal Infirmary, and Dental Hospital, Liverpool; Howard James Paterson, Mason College, Queen's, General, and the Dental Hospital, Birmingham; Oliver Crace Penfold, Middlesex and the Dental Hospital of London; Harry Webb Robey, Charing-cross and the Dental Hospital of London; Arthur Lewis Rowley, Guy's Hospital, Dental Department, and School; William Albert Hodgins Saul, University College, Royal Infirmary, and the Dental Hospital, Liverpool; Frederick William Stanley Stone, M.R.C.S. Eng., L.R.C.P. Lond., St. Thomas and Guy's Hospital, Dental Department, and School; Ernest Stringfellow, Guy's Hospital, Dental Department, and School; Harold Tattersall, Middlesex and the National Dental Hospital; Wallace Atkinson Taylor, Westminster and the Dental Hospital of London; Duncan Powerscroft Tracy, Reginald Umney, Ernest William West, and Thomas Henry Wilkinson, Guy's Hospital, Dental Department, and School; Harry Winder, Charing-cross and the Dental Hospital of London.

21 gentlemen were referred to their professional studies; 20 for six months and 1 for one year.

UNIVERSITY OF CAMBRIDGE.—At the examinations for medical and surgical degrees, Easter term, the following candidates were successful:—

FIRST EXAMINATION.

Part I. Chemistry and Physics.—C. Akerman, Caius; A. E. Barclay, B.A., Christ's; G. F. Bird and H. J. D. Birkett, Trinity; W. F. Blandford, B.A., Peterhouse; M. B. Briggs, St. John's; J. R. Briscoe, H. Selwyn; A. D. Brunwin, Trinity; P. J. Burgess, B.A., Sidney Sussex; S. H. Clarke, Caius; R. M. Courtauld, Pembroke; Coventon, Trinity; G. Cowan, King's; W. L. Cripps, Trinity; A. H. Crossley, Clare; H. F. Curl, Christ's; H. H. J. Fawcett, Trinity; G. E. Footner, Pembroke; C. B. Goulden, Non-Collegiate; H. E. Graham, Jesus; S. L. Harke, Pembroke; G. H. Harper-Smith, Caius; E. T. Harris, Christ's; Hart, Sidney-Sussex; W. H. Hastings, Trinity; G. P. D. Hawker, B.A., Caius; F. A. Hepworth, St. John's; E. Higson, Magdalene; T. W. S. Hills, Downing; G. G. Hirst, Caius; H. F. Horne, King's; J. B. Irving and F. S. Jones, St. John's; H. M. Joseph, Trinity; A. S. Littlejohns, Caius; F. J. Lovett, Trinity; F. Lushington, Jesus; C. W. P. Moffatt, Clare; E. F. Moore, non-collegiate; W. H. Orton, Trinity; B. H. Pain, Emmanuel; O. V. Payne, St. John's; H. I. Pinches, Sidney-Sussex; J. N. Robins, Christ's; G. H. Shepley, St. John's; T. Somerville, Emmanuel; E. C. Sparrow, Trinity; J. M. Stenhouse, Sidney-Sussex; S. J. Steward, Downing; H. T. Thompson, Christ's; G. Thwaites, St. John's; C. F. O. White, Trinity; E. E. Whitting, King's; E. Wight, Sidney-Sussex; A. B. Wilson and N. Wilson, Pembroke; F. L. Woods, Caius; E. A. Worthington, Clare; and B. A. Wright, H. Selwyn.

Part II. Elementary Biology.—C. B. M. Aldridge, A. E. Barclay, B.A., and H. J. Beddow, Christ's; G. F. Bird and H. J. D. Birkett, Trinity; M. B. Briggs, St. John's; J. R. Briscoe, H. Selwyn; E. M. Brown, Pembroke; H. G. Brown, Emmanuel; P. J. Burgess, B.A. Sidney-Sussex; H. M. Clarke, Clare; S. H. Clarke, Caius; D. H. Collingham, King's; G. C. Compton, Caius; E. J. Cooper-Smith, St. John's; R. M. Courtauld, Pembroke; A. W. D. Coventon, Trinity; G. Cowan, King's; F. D. Crew, Emmanuel; A. H. Crossley, Clare; J. M. Cunningham, Trinity; H. A. Cutler, B.A., Clare; S. Dixon, Trinity; E. A. Ellis, Downing; C. H. J. Fagan, Caius; H. Falk, King's; H. H. J. Fawcett, Trinity; G. E. Footner, Pembroke; L. H. Frankenburg, Emmanuel; R. E. V. Hale and G. H. Harper-Smith, Caius; Everard Harrison, Trinity; R. N. Hart, Sidney-Sussex; A. P. Heald, non-collegiate; F. A. Hepworth, St. John's; W. R. Higgins, Caius; E. Higson, Magdalene; T. W. S. Hills, Downing; H. F. Horne, King's; W. E. Hume and W. F. Ingpen, Pembroke; F. A. G. Jeans, St. John's; S. C. Johnson, Trinity; F. S. Jones, St. John's; H. M. Joseph, Trinity; A. E. Kerr, Christ's; H. R. Lawrence, Pembroke; P. C. Lichfield, Trinity Hall; E. Luker, Pembroke; H. F. Marris, Caius; C. W. P. Moffatt, Clare; W. M. Mollison, King's; E. F. Moore, non-collegiate; W. H. Newton, Emmanuel; W. H. Orton, Trinity; H. E. Owen, Caius; B. H. Pain, Emmanuel; O. V. Payne, St. John's; H. I. Pinches, Sidney-Sussex; C. T. MacL. Plowright, St. John's; R. N. Polguand, Caius; T. Somerville, Emmanuel; E. C. Sparrow, Trinity; J. M. Stenhouse, Sidney-Sussex; S. J. Steward, Downing; E. Streatfeild, Queens'; H. T. Thompson, Christ's; W. H. Thresher, Caius; G. Thwaites and G. A. Ticehurst, St. John's; W. E. Weber, H. Selwyn; E. E. Whitting, King's; H. L. Whytehead, H. Selwyn; E. Wight, Sidney-Sussex; E. G. Wills, St. John's; C. D. Wilson, M.A., Corpus Christi; H. W. Wiltshire, Clare; and F. L. Woods, Caius.

SECOND EXAMINATION.

Part I. Pharmaceutical Chemistry.—B. L. T. Barnett, B.A., St. John's; F. M. Bulley, Emmanuel; R. Butterworth, B.A., Christ's; S. Child, B.A., Pembroke; R. A. Clapham, B.A., Emmanuel; G. H. Colt, Sidney-Sussex; W. F. L. Day, Caius; A. P. Day, Christ's; J. H. Donnell, Caius; T. L. Drapes, Sidney-Sussex; R. S. Drew and J. E. Frere, Pembroke; H. P. Gibb, Sidney-Sussex; J. G. Gubbins, Clare; P. Hardy, Trinity Hall; P. Harrison, B.A., Christ's; E. H. Harrisson, Clare; N. G. Harry, Jesus; W. H. Heard, B.A., W. N. Downing; F. C. Hepburn and W. H. Hills, Pembroke; C. D. Horsley, Caius; B. Hudson, Clare; G. C. Lawson, B.A., and W. E. Lee, Trinity; H. B. McCaskie, Caius; F. B. Manser, B.A., Peterhouse; O. May, St. John's; E. B. F. Molteno, Pembroke; W. E. Muil, B.A., Caius; C. H. W. Page, Corpus Christi; P. N. Panton, Trinity; W. E. Paramore, St. John's; C. A. W. Pope, Trinity; E. M. Ranking, Pembroke; E. H. Robbins, Trinity; N. O. Roberts, B.A., Christ's; Roche, B.A., Queens'; C. T. Scott, Sidney-Sussex; F. E. Shipway, B.A., Christ's; H. C. Sidgwick, Clare; J. L. Timmins, B.A., Emmanuel; S. M. Toppin, Caius; A. C. Warren, B.A., Emmanuel; F. Whitaker, B.A., Trinity; W. M. Willoughby, B.A., Caius; A. F. R. Wollaston, B.A., King's; and H. G. K. Young, B.A., Emmanuel.

Part II. Human Anatomy and Physiology.—A. G. Bate, B.A., King's; F. H. M. A. Beckett, B.A., H. Selwyn; R. L. Bellamy, B.A., Downing; H. Bentley, B.A., St. John's; J. E. Bentley, Emmanuel; F. M. Boulton, B.A., Trinity; W. V. Braddon, Trinity Hall; A. H. Brehaut, B.A., H. Selwyn; C. de L. Carey, B.A., Emmanuel; F. J. Child, B.A., Christ's; E. M. Clark, B.A., Trinity; J. S. Clarke, B.A., Caius; Colyer, M.A., Catharine; G. L. Crimp, B.A., Caius; W. E. M. Ede, B.A., King's; F. P. Edwards, Downing; A. O. M. Fehrsen, B.A., Caius; W. M. Fletcher, M.A., H. S. Flook, B.A., and O. F. F. Grünbaum, B.A., Trinity; A. E. Hodder, King's; C. R. Howard, B.A., Pembroke; J. H. McAllum, M.A., Christ's; A. Martineau, B.A., Emmanuel; A. S. Mellor, B.A., King's; J. W. Mercer, B.A., Clare; C. H. Miller, B.A., Trinity; D. J. Morgan, B.A., St. John's; S. H. Nathan, M.A., Trinity; H. H. Riddle, Peterhouse; L. W. Roberts, M.A., Downing; G. Roper, B.A., Non-Collegiate; E. A. Ross, Trinity; B. B. Sapwell, B.A., Corpus Christi; C. A. St. J. Scott, B.A., and G. A. C. Shipman, B.A., Trinity; A. I. Simey, B.A., King's; A. T. Spanton, B.A., Trinity; C. Stiebel, Trinity Hall; E. J. D. Taylor, Caius; H. Wacher, B.A., St. John's; E. G. Wales, Downing; E. F. Williams, B.A., Caius; J. A. Wood, B.A., St. John's; F. E. Wood, Downing; and E. T. Worthington, B.A., Trinity.

THIRD EXAMINATION.

Part I. Barnes, B.A., Christ's; Boulton, B.A., Clare; Byles, King's; W. D. Chapman, B.A., Corpus Christi; H. N. Clarke, B.A., Trinity; Denyer, M.A., Queen's; Dore, B.A., and W. Eardley, M.A., St. John's; Fryer, B.A., Christ's; Garrood, B.A., St. John's; Glasier, B.A., Emmanuel; Glynn, B.A., Clare; W. D. Harmer, B.A., King's; Hart-Smith, B.A., and Hay, B.A., Gonville and Caius; Jordan, B.A., Sidney-Sussex; Kemp, B.A., Clare; Letchworth, B.A., Emmanuel; A. F. MacCallan, B.A., Christ's; H. F. Parker, B.A., Emmanuel; Pettinger, B.A., H. Selwyn; S. P. Pollard, B.A., Gonville and Caius; Powell, B.A., Emmanuel; S. B. Reid, M.A., St. John's; E. E. Sedgwick, B.A., Gonville and Caius; Sewell, B.A., Pembroke; C. C. Simson, M.A., and G. E. Slade, B.A., Trinity; Stacey, B.A., and F. W. Sumner, B.A., St. John's; Sutcliffe, B.A., Emmanuel; Talbot, B.A., King's; Tallent, B.A., and B. C. Taylor, B.A., St. John's; Thorp, B.A., Emmanuel; I. Ll. Tuckett, M.A., Trinity; Ware, B.A., Pembroke; W. K. Wills, B.A., St. John's; R. J. Willson, B.A., Emmanuel; and A. G. Wilson, B.A., Gonville and Caius.

Part II. Betteridge, B.A., Gonville and Caius; T. H. Brown, B.A., Pembroke; Byles, King's; Carter, B.A., Jesus; Corner, B.A., Sidney-Sussex; H. G. Deller, B.A., Trinity; A. B. Green, M.A., Downing; Gregory, B.A., St. John's; Harrisson, B.A., Magdalene; Heilborn, B.A., Gonville and Caius; Levick, B.A., Jesus; E. A. C. Matthews, B.A., Trinity; H. E. May, M.A., and F. A. Mills, B.A., Clare; Nalah, B.A., Trinity; Peet, B.A., St. John's; Ransome, B.A., Gonville and Caius; Roderick, B.A., Emmanuel; J. E. Sandilands, B.A., Trinity; Sargeaunt, B.A., St. John's; Hon. G. H. Scott, B.A., Trinity; and C. White, B.A., Christ's.

LITERARY INTELLIGENCE.—The following books based upon the new Pharmacopœia will be published by Messrs. J. & A. Churchill. The third edition of "Materia Medica, Pharmacy, Pharmacology, and Therapeutics," by

Dr. Hale White, physician to Guy's Hospital. This is now ready. A new work on "Practical Pharmacy," by Mr. E. W. Lucas, examiner in pharmacy to the Pharmaceutical Society: the work will be profusely illustrated and will contain a chapter on the Analysis of Urine; the publication will take place shortly. Also the twelfth edition of Beasley's "Pocket Formulary and Synopsis of the British and Foreign Pharmacopœias," brought up to date by Mr. J. Oldham Braithwaite. The seventeenth edition of Squire's "Companion to the British Pharmacopœia" will, it is hoped, be issued in September.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The Cavendish Lecture was delivered before this society at the Town Hall, Hammersmith, on June 24th, by Mr. Howard Marsh, Mr. H. P. Potter, President, being in the chair. Mr. Marsh took as his subject Growth as an Agent in (*a*) the Production, (*b*) the Removal, of Deformity, and illustrated his lecture by numerous specimens, diagrams, and photographs. After the lecture, which was a thoroughly able and interesting one, the members of the society in large numbers gathered at the annual conversazione. Here there was much to interest in the exhibits placed on the tables by many well-known firms of chemists, instrument makers, and others; and special mention may be made of the beautiful collection of bacteriological cultures and microscopic specimens shown by Mr. W. Severn.

THE CENTRAL LONDON OPHTHALMIC HOSPITAL.—At the Mansion House on June 16th a meeting in aid of this institution was held, when, in the absence of the Lord Mayor, Alderman Sir Joseph Savory, Bart., M.P., presided. The Chairman remarked that he believed everybody present was fully impressed with the needs and utility of this hospital, which was established 54 years ago, and at the present time was relieving about 11,000 patients every year. Since its origin in 1845 it had benefited no fewer than 400,000 persons.—Sir Dyce Duckworth (consulting physician to the hospital, approving of the scheme for rebuilding the hospital, moved a resolution pledging those present to secure by every means in their power liberal aid from all who sympathised with ophthalmic suffering.—This was agreed to and the secretary then announced subscriptions amounting to £637. £13,000 are still required, however, for the proposed work.

PRESENTATIONS TO MEDICAL MEN.—On June 23rd, on the occasion of the first presentation of medallions and certificates to the male and female members of the York Town and Camberley Branch of the St. John Ambulance Association, Mr. H. E. Rayner, F.R.C.S., L.R.C.P. Lond. of Camberley, was the recipient from the male class of a meerschaum pipe, with an inscription on a silver shield. At the same time Mr. A. T. Wooldridge, L.R.C.P. Lond., M.R.C.S. Eng., of Camberley, was presented by the female class with an inkstand, both were thank-offerings for gratuitous instructions on first aid.—Mr. Edward Ryan, M.B. Melb. of Nhill, Victoria, Australia, the medical officer of the Nhill Hospital, Victoria, has been entertained at a banquet by the inhabitants prior to his leaving for England.—Mr. Wm. Geo. Armstrong, M.B., Ch.M. Syd., D.P.H. Camb., of Bowral, New South Wales, has been presented with a handsome clock by the inhabitants on his leaving the district.—Last week the members of the Lydney Junction, Severn, and Wye Joint Railway Ambulance Corps presented Mr. Cyril Nelson Thomas, B.A., M.B., B.C. Cantab., with a gold-mounted umbrella as a mark of appreciation for his services as honorary lecturer.

THE METROPOLITAN PROVIDENT MEDICAL ASSOCIATION.—The Right Hon. Sir U. Kay-Shuttleworth, Bart., presided at a meeting of this association on June 16th, at 121, Sloane-street, when the annual report for 1897 was unanimously adopted. The report stated that the work of the institution has been steadily carried on and in some instances satisfactorily developed. Taken as a whole, however, the figures for 1897 do not show any general improvement on those of previous years. A really satisfactory advance has been made both at Woolwich and at Islington. Pimlico, too, shows a slight advance. One new dispensary has been opened during the year at Whitechapel. Altogether there are now 19 branches of the association, of which 14 are dispensaries and 5 medical clubs. There has been a falling-off in the list of ordinary donations and subscriptions, which, excluding the £1000 given by the Baroness de Hirsch and the grant of £300 from the trustees of the London Parochial Charities, amounted to only £289 9*s.* 6*d.* The Council state that their attempt to grapple with the difficulties connected with the medical treatment of the working classes has been very successful as far as the funds they have had to deal with have permitted and that their system could be largely extended at once if more support were forthcoming. The following figures show the branch statistics for the year 1897:—Number of cards, 10,525. Receipts—Members' payments, £4839; grants from council of the Metropolitan Provident Medical Association, £450; grants from Hospital Sunday Fund, £119; honorary subscriptions, &c., £206. Payments—Medical staff, £3062; dispensers, £824; drugs and dispensary sundries, £415; official salaries (secretaries, collectors, &c.), £485; rent, rates, taxes, &c., £746; postage, printing, stationery, &c., £117.

Parliamentary Intelligence.

HOUSE OF LORDS.

FRIDAY, JUNE 24TH.

The Sale of Poisons.

On the motion of the Duke of DEVONSHIRE the House gave a second reading to the Poisons Bill introduced and promoted by the Government. His lordship explained that the object of the measure was to give to the public some protection against the indiscriminate sale of poisons beyond that which was already afforded by the Pharmacy Act. That Act dealt with certain poisons and imposed certain restrictions on the sale of those poisons. The chief restriction which the Pharmaceutical Society imposed was that the sale of the poisons was limited to persons registered by the Society. The list of poisons in the schedule might be extended, on the recommendation of the Pharmaceutical Society, by the Privy Council, and repeated applications had been made to the Privy Council to include certain other articles enumerated in the schedule to the Bill now before the House under the Pharmacy Acts. Amongst those articles was carbolic acid, which was largely used as a disinfectant. The other articles were butter of antimony, chloride of zinc and its solutions, cresylic acid, hydrochloric acid, nitric acid, sulphuric acid, sugar of lead and other salts of lead, preparations of carbolic or cresylic acid or their homologues used as disinfectants, and containing more than 10 per cent. of any of them, and substances sold for the purpose of poisoning insects or vermin. The Privy Council had always declined to include those articles in the schedule to the Pharmacy Act upon two grounds. The first ground was that of the inconvenience to which the public would be exposed if any additional difficulty were imposed in the way of obtaining these extremely necessary articles, and the second was the dislocation of the trade which would follow if the sale of the articles were placed in the hands of what was virtually a great monopoly. On the other hand, the Privy Council had received numerous representations from coroners' juries to the effect that some additional precautions ought to be taken against the indiscriminate sale of these articles. It was not contended that this legislation, or any other legislation, could very largely diminish the number of deaths which annually took place in consequence of the use of these articles. Out of 579 deaths which occurred in 1895 and 1896 owing to the use of the articles enumerated in the schedule of the Bill only 111 were due to accidental causes, 468 being cases of suicide. Of the 111 cases 29 were cases of children under ten years of age. There lordships would agree that if better protection could be given against the accidental use of poisons, it ought to be given. The Bill also contained a certain amendment of the Pharmacy Act itself. That Act had not been altogether successful in preventing accidental deaths from the use of poisons included in the schedule of the Act, for of 786 deaths which took place in 1895 and 1896 from the use of the poisons included in the schedule of the Act exactly half were the result of accidental use of the poisons. The Bill provided that the Privy Council might independently of the Pharmaceutical Society make regulations in regard to the sale of the poisons.

HOUSE OF COMMONS.

TUESDAY, JUNE 21ST.

The Indian Medical Service.

Captain NORTON asked the Under Secretary of State for War whether in connexion with coming changes in the Army Medical Staff it was in contemplation to withdraw the officers of the Army Medical Staff from the medical charge of Her Majesty's troops serving in India.—Mr. BRODRICK replied: No, sir; I am not aware of any such intention.—Captain NORTON asked the Secretary of State for India when it was proposed to amend the Indian Medical Regulations so as to insure that officers of the Indian Medical Service who have no previous military experience, or at all events have not any lengthened period of experience in military duties, shall be made to pass a longer period for military medical training than two months in the office of a principal medical officer prior to being selected for promotion to administrative grade; whether any changes and, if so, what changes in this respect had been proposed or recommended; and when they would be promulgated.—Lord GEORGE HAMILTON replied: I have not received from the Indian Government any proposal to amend the Indian medical regulations in regard to the training of medical officers selected for promotion to the administrative grade.

Admissions to Military Hospitals.

Captain NORTON asked the Under Secretary of State for War if he could state the number of non-commissioned officers and men annually admitted into hospital, the number discharged from hospital but

recommended for light duty, as well as the number of invalids discharged from the service, also the average number in hospital suffering from incurable disease.—Mr. BRODRICK replied that, including the army at home, in India, and at all other stations, the average number of admissions to hospitals during the last ten years was 198,735, but of these cases the great proportion would be unimportant in their character, and would not be regarded in an ordinary hospital as being of the in-patient class. Each admission of the same man was reckoned in the figures given as though it were a separate case: 2337 men had on the average been discharged as invalids. There were no records to show the number discharged from hospital but recommended for light duty or the number in hospital suffering from incurable disease.

THURSDAY, JUNE 23RD.

The Water Question.

At this sitting of the House there were four private Bills promoted by water companies in different parts of the country set down for consideration and in connexion with each of them Mr. Chaplin, President of the Local Government Board, had given notice of a series of new clauses which he proposed to have inserted. Mr. CHAPLIN introducing the subject, recalled to the House what had occurred at Maidstone, King's Lynn, Camborne, and other places, and said that the time had come when, in the opinion of the Local Government Board, some action was necessary. The Board addressed two circulars to all the different local authorities, the first inquiring by whom their water was supplied—whether by local authorities or by water companies—and the second impressing upon them the necessity of seeing that their supplies were pure and wholesome, and urging the responsibility which rested upon them in the matter. The Local Government Board did this early in the year and, in the meantime, various water Bills were delivered and received by them, in some of which there were included clauses to prevent pollution. These clauses, generally, were for the purpose of obtaining further powers of preventing pollution; but they differed in many ways and were open to objections and, although the Local Government Board agreed generally in the objects in view, they had to consider all the alternative proposals which could be made. But apart from the proposals in the Bills they had had complaints in certain cases of the quality of the water supplied by different local authorities and the views of the department with reference to the supply of pure and wholesome water and the means of preventing pollution were embodied in the reports which were sent to the committees to whom the Bills were referred. General clauses were drafted which should be applicable to all the Bills and these now appeared on the paper, though they had been modified to meet, as far as possible, the objections which were taken to them as originally drafted. In this, he had reason to believe, they had to some extent succeeded. As to the clauses themselves, he would point out that two conditions were essential to prevent as far as possible the recurrence of similar disasters to that which took place at Maidstone. The first was that the consumer must be protected against any shortcomings on the part of the water authorities and, secondly, these authorities themselves must be invested with sufficient powers to protect themselves from pollution of the sources from which they drew their supply. There was a third point which somehow or other appeared to have been overlooked in existing legislation. This was that the failure to fulfil existing obligations to provide a pure and wholesome supply of water was to be liable to a definite penalty. This was not the case now, but the matter was dealt with in one of the clauses he had put down on the notice paper. With regard to the other points endeavour was made to protect the consumer from any failure of duty by the water authority, first by empowering an officer authorised by the local authority to enter the premises of the water authority and take samples of the water supplied, and secondly by allowing consumers under certain conditions to take a similar course. Indiscriminate power of entry given to any consumer would entail needless annoyance on water authorities and therefore to the power of entry the following conditions were attached: that the consumer should obtain an order from a justice of the district granted only after reasonable notice given by the consumer to the water company of intention to make the application and upon showing reasonable cause for doing so; and, further, a notice of six hours would be required stating when and where samples were proposed to be taken. These conditions would secure the water authority against frivolous action on the part of a consumer. For the protection of water authorities against pollution of their sources of supply it was proposed to give to officers of the water authority or the medical officer of the local authority power to enter on lands or premises from which water was supplied and "to take and carry away samples of any water or of any matter, substance, or liquid which may appear likely to cause pollution to the water of the company or the sources of supply whereby such water may be fouled, and if the right of entry is obstructed or refused them a justice in the district after notice and reasonable cause may require admission by order." It had been objected that the clauses were unnecessary, and, if necessary, that they should be embodied in a public Bill; that the consumer should be eliminated from the clauses, and that the clauses should not in any case apply to corporations. Admitting the different position of corporations who supplied only their own constituents—these were but a small minority—the great majority of corporations supplied others, and he saw no valid reason for exempting them from the clauses. As to the elimination of the consumer it had apparently been forgotten that, in the Bill of last session dealing with the London water companies, the consumer was given power to take the water company before the new tribunal, and local authorities were empowered to assist the consumer with funds. It had been impossible, owing to pressure of business, to introduce these clauses in a public Bill, and with twenty-one water Bills before the House and in view of disasters such as he had mentioned, he was anxious to make some effort to improve the present position and this opportunity presented itself. This was a question directly affecting the public health, the need of reform could not be denied, there was nothing in the clauses to which reasonable objection could be taken, and he hoped the House would support him in the matter having regard to the useful and beneficial proposals which these clauses contained.—Mr. MELLOR, a former Chairman of Ways and Means, said that this was an attempt to alter the general law by means of a private Bill and as such it was bad legislation and should not be encouraged. He said this quite apart from the merits of the proposed clauses.—Mr. CORNWALLIS, the member for Maidstone, said that while his constituents were grateful to the President of the Local Government Board for what he proposed, they considered that his proposals did not go far enough and that the whole subject should be dealt with in a public Bill.—Sir JOSEPH PEASE also argued in favour of a public Bill.—Sir W. HART DYKE and Mr. BUXTON spoke in the same line.—After some further debate, in which several more members declared themselves in favour of a public Bill, Mr. CHAPLIN said he must yield to the evident sense of the House and withdraw his proposals.—The clauses were accordingly withdrawn.

The Dangers of Italian Ice-creams.

Sir HERBERT MAXWELL asked the President of the Local Government Board whether his attention had been drawn to recent deaths of children owing, as was alleged, to their having eaten so-called "ice-creams" sold by Italians in the streets; whether he was aware that several samples of these creams had been reported on by Dr. Klein, to the effect that all of them were swarming with colonies of the bacilli characteristic either of sewage matter or putrescence, or both; whether, in addition, attention had been drawn to the danger of mouth-to-mouth infection to children sucking ices successively out of the same glass; and whether the provisions of the Public Health Acts and the Food and Drugs Acts were inefficient to control or prohibit the sale of poisonous compounds such as these ices.—Mr. CHAPLIN replied: My attention has been drawn to this subject and I am aware of the fact that two children recently suffered from vomiting and diarrhœa after eating ice-cream, one of them dying, and that the coroner's jury attributed the death to the consumption of ice-creams. I understand that Dr. Klein in 1894 made some investigations for one of the London vestries of specimens of water and ice-cream submitted to him and that he discovered numerous organisms. As to the third question the practice referred to is obviously objectionable, but I have no evidence of actual mischief having resulted. I am advised that these ices would come within the provisions of the Public Health (London) Act, 1891, section 47, and also under the Public Health Acts Amendment Act, 1890, where that Act has been adopted; but I am making further inquiries into the circumstances of these lamentable occurrences, and if it should prove to me necessary I shall have to consider whether any, and what, alteration of the law may be desirable.—Sir HERBERT MAXWELL asked the right hon. gentleman whether these so-called ice-creams could be regarded as dairy products and the places where they were made inspected.—Mr. CHAPLIN replied that he should be sorry to regard these places in the nature of dairies, but there was no doubt from what he knew that the conditions under which the ices were prepared were discreditable and dangerous in the extreme.

The Preparation of Calf Lymph.

Mr. CHANNING asked the President of the Local Government Board whether the calves from which lymph would be taken for vaccination would be submitted to the tuberculin test and those calves excluded from use which were shown by the tuberculin test to be suffering from tuberculosis?—Mr. CHAPLIN replied: I have considered this matter and the proposal of the hon. member will be unnecessary, because I am making arrangements by which each calf from which lymph has been taken will be slaughtered and examined by a competent expert and no lymph will be issued from any calf until it has been ascertained and certified on post mortem that the animal is not only free from all signs of tuberculosis, but that it is also healthy in other respects.

Venereal Disease in Hong-Kong.

Mr. DUNCOMBE asked the Secretary of State for the Colonies whether he was aware that the Contagious Diseases Ordinances which were in force in Hong-Kong from 1858 to 1887 were repealed in opposition to the wish of the colony and that the repeal had been followed by a serious increase of disease, as alleged by the China Association in their memorial of Aug. 30th, 1897; and whether, in view of the recent augmentation of our forces in Eastern waters, he would reconsider the refusal to sanction the re-enactment of these ordinances conveyed in his letter to the association of Feb. 19th, 1898.—Mr. CHAMBERLAIN replied: I am aware of the facts referred to by the hon. Member, but I am not prepared to sanction the re-enactment of the Hong-Kong Contagious Diseases Ordinances. I am, however, conferring with the governor as to whether other measures can be adopted to check the spread of venereal diseases in the colony. The correspondence is not yet completed and when completed it will be laid before the House.

Post-mortem Examinations.

Mr. DAVITT asked the Home Secretary whether his attention had been directed to the proceedings of a medical gentleman in making a post-mortem examination on the body of one John Leonard, who died at Alfreton: was he aware that Leonard was attended by two qualified doctors before death and that a certificate of the usual kind, showing the cause of death, was given on May 9th; that on the same day, a few hours after the signing of this certificate, a medical practitioner in no way concerned in the case entered the room where the body lay and performed the operation referred to without any authority from the coroner or the friends of the deceased; whether such conduct was a violation of the law, and what steps did he propose to take to stop such unwarranted proceedings in future.—Sir M. WHITE RIDLEY replied: Yes, my attention was called to the case some weeks ago and I made inquiries. It appears that the examination was carried out by the son of the doctor, one of the two mentioned in the question who gave the certificate, and at his request, the medical man being of opinion that his judgment as to the cause of death required verification. The only friends of the deceased who were known at the time were the people with whom he lodged and they assented to the examination being made. I am advised that it is by no means clear that there has been any violation of the law.

Hospital Stoppages in the Army.

Mr. ARNOLD FORSTER asked the Under Secretary of State for War what would be the amount of the hospital stoppage in the case of soldiers who have accepted the new messing allowance when the medical officer has certified that the soldier is in hospital owing to illness or injury incurred by reason of the performance of his duty, and when the medical officer has not so certified; and by what amount the hospital stoppage in the cases referred to would exceed or be less than the stoppage in the case of soldiers who have not accepted the new messing allowance.—Mr. BRODRICK replied that the hospital stoppage

was normally 7*d.* a day and was applicable equally to those who had and those who had not accepted the new messing allowance. In cases where the disability was certified to be the direct result of military service the general officer might remit one half of the stoppage and he might remit the whole if the disability was due to an injury received at drill or manœuvres.

FRIDAY, JUNE 24TH.

Adenoid Disease in the Hanwell Schools.

Dr. FARQUHARSON asked the President of the Local Government Board whether his attention had been called to a report by Dr. Willcocks of the Charing cross Hospital, by which it appears that out of 82 children varying in age from three to sixteen in the barrack schools of Hanwell belonging to the Central London District, it was found that 30 were suffering from adenoid growths of the throat at the back of the nose and 23 from enlargement of the tonsils, while in 9 cases there was considerable enlargement of the tonsils, and in several cases a discharge from the ear with perforation of the drum of the ear; and whether he would direct an inquiry to be made by the Local Government Board with a view to the best being done for each individual child.—Mr. CHAPLIN: I have already given directions for an inquiry with regard to the cases of the children referred to. I may, however, say that Dr. Willcocks in his report distinctly says that the school life and surroundings of the children cannot be held responsible in any sense for the adenoid disease, the disease being prevalent among children in all classes of society.

MONDAY, JUNE 27TH.

The Water Question.

Mr. MARKS asked the President of the Local Government Board whether he intended to introduce early next session a Bill to ensure the supply by water companies of pure and wholesome water and otherwise safeguard the interests of water consumers and if so whether the Bill would apply to all existing companies.—Mr. CHAPLIN replied: I am not in a position to make any statement as to the legislation which the Government may propose next session or the scope and the extent of any Bill they may introduce.

Cost of Hospital Treatment in the Army.

Captain NORTON asked the Under Secretary of State for War whether he could state the *per capita* cost of each sick soldier in hospital.—Mr. BRODRICK replied that there was no general statement of cost made for all hospitals, but a short time back the cost was worked out at a typical hospital and it was found that the cost per patient over and above his cost when on duty was about 1*s.* 8*d.* a day for items concerning the man himself, or 2*s.* a day if the cost of the medical officers were added.

The Royal Army Medical Corps.

Mr. POWELL WILLIAMS, in reply to Dr. Farquharson, said that the warrant constituting the Royal Army Medical Corps had been approved by Her Majesty and would be published in the Army Orders for July.

Army Nursing Sisters.

Captain NORTON asked the Under Secretary of State for War whether, seeing that an army nursing sister could retire at the age of sixty after from thirty to thirty-five years' service with a pension of £38 10*s.* a year, whereas an army schoolmistress could retire at the age of fifty after twenty one years' service with a pension of £45 10*s.* a year, he would state why there should be such difference between the treatment of these two classes; and whether he would consider the advisability of improving the conditions of retirement of army nursing sisters.—Mr. BRODRICK said that the facts of the case were not as stated in the question. An army nursing sister would receive after thirty years' service £35 a year, and if reported as having given special devotion to her duties might receive a higher pension up to a maximum of £50. An army schoolmistress would receive after twenty-one years' service £31 19*s.* 2*d.*, and after thirty years' service £45 13*s.* a year. The Secretary of State saw no reason to make any change in these conditions.

Vaccination in Scotland.

Mr. DALZIEL asked the Lord Advocate whether the Secretary for Scotland had received a representation from the Abbotshall Parish Council urging that any action in regard to the prosecution of parents who had declined to have their children vaccinated should be delayed until after the election of a new council which would shortly take place; whether the Local Government Board had intimated that, unless the council prosecuted within ten days the members of the council would be summoned before the Court of Session; and whether he could accede to the request of the parish council.—The LORD ADVOCATE replied: In answer to the first portion of the hon. Member's question the Secretary for Scotland informs me that he received a letter from the chairman of the Abbotshall Parish Council a day or two ago, but the letter does not state that it is written by desire of the council. In reply to the second portion, the Local Government Board did make the intimation referred to in strict conformity with the terms of the statute which regulates their procedure in such cases. The Secretary for Scotland cannot, as at present advised, undertake to interfere with the ordinary course of the law in cases of a first prosecution, though he does not propose to make any change in the existing practice not to insist for cumulative prosecutions for the same offence.

THE VACCINATION BILL.

PROCEEDINGS IN THE GRAND COMMITTEE.

The Grand Committee of the House of Commons on Law met on June 21st, when the debate on Sir Walter Foster's amendment was resumed.

Mr THOMAS BAYLEY said that it was evident from the speech of the President of the Local Government Board that he would be rather in favour of a conscience clause like the one proposed, only he was afraid that a great many parents who had no conscientious scruples would take advantage of it. This fear was not justified, for it was only a person with conscientious objections who would take the trouble and bear the expense which the proposal in the amendment entailed. In this matter the Government were treating vaccination as if it were a mathematical medical certainty, while as a matter of fact it was nothing of the sort. No responsible medical man would say that it was a mathematical medical certainty. The army was vaccinated and revaccinated, and, in fact, the medical authorities had full sway over the men in the matter of vaccination; yet, according to the Royal Commission, no fewer than 3953 revaccinated soldiers suffered from small-pox during the last twenty years, and of these 391 died from the disease. That was a larger proportion than the persons who died from small-pox in the same time in the town of Leicester. In the town of Gloucester they had 190 persons who had been vaccinated during the outbreak suffering from small-pox. He agreed with Mr. Gladstone in saying that the State was a bad nurse and he insisted that the state had no right to say to a parent that his child should be treated in a particular way. If there was no conscience clause then there was nothing for it but imprisonment for conscientious objection. Such imprisonment, in his opinion, was a disgrace to our civilisation and a disgrace to us as a nation and for that reason he hoped the Government would accept some compromise. If they did not then agitation would increase and the feeling against vaccination would grow stronger and stronger.

Mr. MONK said that his view of the amendment was that it struck a heavy blow at vaccination generally, inasmuch as it left vaccination optional. He would remind members of the Committee that the Royal Commission said in their report, "Nor are we prepared to recommend that the State should cease to require vaccination and trust entirely to the voluntary adoption of the practice." With this recommendation before them the Local Government Board could not propose that vaccination should no longer be compulsory. For the life of him he could not see why, at any rate, the State should not adopt the suggestion of Sir William Priestley and insist that the child should be vaccinated before going to school and becoming a source of danger to its fellows. Soldiers were vaccinated, and so also were certain of the civil servants, and he saw no reason why the same rule should not apply to children going to school.

Mr. J. BRIGG, speaking in support of the amendment, gave an account of the experience of Keighley, where, he said, great good had been obtained from isolation.

Mr. J. W. WILSON said he intended to support the amendment and to do so in the interests of vaccination. He believed that the objection to vaccination was far more deeply rooted in the minds of the working classes of this country than the Government imagined, and that by the adoption of this amendment something would be done to overcome the objection.

Dr. CLARK also supported the amendment. He declared that the speech of the President of the Local Government Board showed that the department had learned nothing and had forgotten nothing in connexion with this subject. It had consented to the appointment of the Royal Commission and now it refused to accept one of its principal recommendations. Compulsory vaccination was established in this country on the theory that vaccination was a thorough and complete prophylactic, but at the present time no man of science in this country or even in Germany would stand by the theory, and he claimed that in the circumstances of the situation they should give a trial to a conscience clause. In our small-pox hospitals nine-tenths of the patients were people who had been vaccinated and revaccinated. He had no sympathy with the ignorance that underlay a great deal of the agitation against vaccination, but at the same time he could not shut his eyes to the fact that vaccination was only a partial prophylaxis, and that isolation was the thing to look to in this matter.

Mr. JOHNSON-FERGUSON submitted that in the interests of the dignity of the law they should have a conscience clause.

Mr. BRYN ROBERTS also spoke in support of the amendment.

Mr. T. W. RUSSELL, Parliamentary Secretary to the Local Government Board, said that all the material before the Board went to show that the men who really objected to vaccination were a small body while the careless and indifferent parents were to be counted by tens of thousands. In the case of Gloucester, which was practically unvaccinated when the outbreak occurred, no fewer than 27,000 persons rushed to be vaccinated when the small-pox got a grip of the town, while in the case of Cheltenham 7000 persons were vaccinated at the instance of the town council. Altogether he submitted that far too much had been made of the conscientious objector.

Mr. HELDER argued that this amendment meant the repeal of all the vaccination laws.

Sir WALTER FOSTER then replied to the debate. He said that the Committee must deal with things as they found them and recognise that there was a strong feeling in the country against vaccination; not only so, but they must pay regard to the recommendation of the Royal Commission. As to the position of Sir William Priestley he pointed out that there were four medical men on the Committee and Sir William Priestley was the only one of the four who objected to the amendment. To have only one penalty and then give the defaulter the opportunity of making a statutory declaration would not meet the case, because a single penalty would do all the mischief in the way of creating martyrs and stimulating agitation. As to the case of Barton Regis it was manifest that the conditions there were all in favour of an evasion of the law, while the system he proposed was full of safeguards to test the sincerity of the objector.

The Committee then divided, when 24 members voted for the amendment and 26 voted against it.

The amendment was consequently lost.

Mr. CHANNING moved to insert in the clause these words, viz:—"Notwithstanding any regulation of any lying-in or other hospital or infirmary, or other similar institution, the parent of any child born in any such institution shall not be compelled, under such regulation or otherwise, to cause or permit the said child to be vaccinated at any time earlier than the period after birth specified in this section."

Mr. CHAPLIN accepted the amendment and the words were inserted in the clause.

Mr. CHANNING moved to strike out the subsection providing for domiciliary visits on the ground that it involved compulsion on the parent and interference with his rights.

Sir WILLIAM PRIESTLEY said that the system of domiciliary visits had been recommended by the Royal Commission and had worked successfully and harmoniously in Scotland.

Sir CHARLES DALRYMPLE spoke in the same line.

Mr. CHAPLIN assured the Committee that the subsection was conceived in the interest of the parents and their convenience and that they would not suffer in an way from it. There was no compulsion, for the officer merely offered to vaccinate.

Sir WALTER FOSTER said that later he would move the insertion of

words to provide that where the home of the parent was unsuitable for the operation the vaccination should be performed elsewhere.

Mr. LOGAN condemned the subsection as dictating to the parent and interfering with his liberty.

The amendment was rejected by 26 to 6 votes.

On the motion of Sir WALTER FOSTER the specified period in the subsection was reduced from 9 to 4 months after the birth of the child.

Thereafter the Committee adjourned.

The Grand Committee of the House of Commons on Law met on June 24th, with Sir HENRY CAMPBELL BANNERMAN in the chair, and resumed the consideration of the Vaccination Bill.

Discussion was continued upon Section 3 of the first clause, which sets forth that if a child is not vaccinated within four months (nine months was the period mentioned in the Bill as introduced) the public vaccinator of the district shall visit the home of the child and shall offer to vaccinate the child with glycerinated calf lymph.

Mr. CHANNING moved to insert a provision for at least twenty-four hours' notice of the proposed visit of the public vaccinator.

Mr. CHAPLIN agreed that notice should be given, but he thought it was a matter that might be left to the Local Government Board to deal with by way of regulation.

Sir WALTER FOSTER said that the regulations of the Board did not always give satisfaction, and without saying that the dissatisfaction was well- or ill-founded, he thought in the circumstances it would be a good thing to insert in the Bill itself a proviso with regard to notice.

On the understanding that Mr. Chaplin would deal with the matter during the report stage of the Bill the amendment was withdrawn.

Dr. CLARK moved to delete the words, "with glycerinated calf lymph." The hon. Member argued that scientific investigation had not placed it beyond all doubt that this particular kind of lymph was absolutely free from the danger of communicating such other diseases as tubercle and erysipelas. In their report the Royal Commission on Vaccination said that further scientific investigation was obviously necessary, and so far as he was aware no such investigation had taken place. In these circumstances he thought the Government were not justified in inserting in the statute that glycerinated calf-lymph shall be used in the vaccination. His own idea, he said, was that there should be some option in the matter.

Mr. CHAPLIN opposed the amendment. The mover of it, he said, was quite mistaken in thinking that there had been no further scientific investigation into this matter of the lymph since the Royal Commission made their report. On the contrary, investigation had been carried on and was even now being carried on and the results made it perfectly clear to his mind that there was no danger either of tubercle or erysipelas being communicated by glycerinated calf-lymph.

Mr. CHANNING, supporting the amendment, said that the Royal Commission had established beyond doubt that calf-lymph had been the cause of serious illness and even death and it had not yet been proved that the addition of glycerine prevented these results.

Sir WILLIAM PRIESTLEY gave an account to the Committee of certain experiments with glycerinated calf-lymph which he had himself seen, saying that they furnished remarkable evidence of the power of the solution of glycerine to destroy the organisms of disease which might go along with the calf lymph, without impairing the efficacy of the lymph itself. In his opinion this was the best form of lymph that could be offered to the public, though he quite admitted that in course of time science might improve upon it.

Sir WALTER FOSTER said that to take away these words as had been proposed would be to deprive the Bill of its only merit. Not only so, but he regretted that the question had been raised, for the discussion which had taken place would, he feared, do a great deal to disturb public confidence in vaccination and in glycerinated calf lymph.

Mr. CARLILE said he had prepared an amendment in which it was proposed that if the parent signified a desire to have the vaccination performed with humanised lymph the public vaccinator might so perform it on receiving a written statement of the desire of the parent signed by the parent and witnessed by one witness. This, he said, represented a compromise which perhaps Dr. Clark might accept.

Dr. CLARK said he was willing to accept this suggestion, for his only object was to give parents an option in the matter.

Mr. J. W. WILSON pointed out that in course of time some other form of lymph might be discovered, and suggested that the provision in the Bill should be to the effect that the vaccination shall be performed with glycerinated lymph or any other form of lymph the Local Government Board might issue.

Mr. CHAPLIN expressed his readiness to accept this suggestion if it commended itself to the Committee generally, though he was afraid some Members had no very great confidence in the Local Government Board. As to there being an option, he might say that one existed already, because it was perfectly open to any parent to employ a private practitioner, and in that event any lymph could be used.

Mr. BAYLEY said that a great many people would feel horrified at the idea of their children being vaccinated with lymph taken from a dead animal and asked the President of the Local Government Board for an assurance on the subject.

Mr. CHAPLIN replied that in no circumstances whatever would lymph be taken from a dead animal or would any be imported from abroad. All the lymph which would be used by the public vaccinators would be produced, prepared, and issued by the Local Government Board and it would be ready in ample time for the passing of the Act.

The amendment moved by Dr. Clark was then withdrawn and words incorporating Mr. Wilson's suggestion were inserted in the section.

Mr. CHANNING moved to insert words providing that the lymph shall be "free from blood and extraneous micro-organisms or ptomaine alkaloids and certified to be absolutely free from the risk of causing any disease other than cow-pox, such certificate to be produced and a copy thereof to be supplied on demand of the parent."

This amendment was opposed by the Government and rejected by the Committee by 14 to 5 votes.

Mr. CHANNING, on behalf of Sir WALTER FOSTER, moved to add the two following sections to the clause—viz.: "The public vaccinator shall not vaccinate a child if, in his opinion, the condition of the house in which it resides is such that it cannot be safely vaccinated. A public vaccinator may give a certificate under Section 18 of the Vaccination Act of 1867 of postponement of vaccination on the ground that the house in which the child resides is in such a state that the child cannot be safely vaccinated, and shall forthwith give notice of any such certificate to the medical officer of health for the district."

This amendment was adopted by the Committee.

Mr. BRIGG moved to add these words: "But no child shall be vaccinated whose parents, or the person in charge of the child, shall at the time allege reasons which to the public vaccinator are considered by him sufficient to justify him in postponing or refusing vaccination."

Mr. CHAPLIN opposed the amendment as unnecessary, saying that under the present law there was power to postpone vaccination for sufficient reason, and the Committee rejected it by 18 to 8 votes.

The question was then put from the chair that Clause 1 as amended stand part of the Bill and upon this there was some general discussion with regard to the merits of the clause.

In the end the clause was adopted by 20 to 7 votes.

The Committee thereafter adjourned.

The Committee resumed consideration of the Bill on Tuesday June 28th, with Sir H. CAMPBELL-BANNERMAN in the chair. Clause 2, which runs as follows, was taken in hand: "An order under Section 31 of the Vaccination Act of 1867, directing that a child be vaccinated, shall not be made on any person who has previously been convicted of non-compliance with a similar order relating to the same child."

Mr. THOMAS BAYLEY moved that a vaccination order should not be made until the sanction of the Poor-law guardians had been obtained. Without this alteration, he contended, the Bill would take from the guardians the power they practically possessed of deciding whether vaccination should be compulsory or not.

Mr. LOGAN called upon every member who respected local self-government to vote for the amendment.

Mr. T. W. RUSSELL preferred the clause as it stood.

Mr. CHANNING invited the Government to reflect that according to the Royal Commission the Local Government Board had always been beaten in conflicts with the guardians over vaccination.

The Solicitor-General (Sir R. FINLAY) hoped the Committee would not accept the amendment, which was revolutionary, because it would nullify not merely the clause but an existing law. It might surprise some people to learn that under the law as it stood a vaccination officer could take proceedings without reference to the guardians. That was made clear in the case of Braddon *v.* Low. The Bill offered the substantial concession that there should be only one conviction under Clause 31 of the Act of 1867 and the Government could not go further.

Mr. BRIGG thought the Solicitor-General showed how little he understood the position of anti-vaccinationists. He stamped on their toes with his law, forgetting that in practice the guardians possessed some option with regard to compulsion. That option would be taken from them if the amendment were not adopted.

Mr. HAZELL hoped the amendment would not be pressed as it would raise discussions among guardians not hitherto agitated by the vaccination controversy.

Sir WALTER FOSTER thought Mr. Hazell mistaken. Anti-vaccinationists were summoned for the first time without their cases being discussed by the guardians. The working of the Bill would only agitate the latter when vaccination was enforced contrary to their wishes. That, however, was a serious contingency. It involved, moreover, an intolerable position for the vaccination officer, on one side of whom would be the Local Government Board, determined that he should vaccinate, and on the other the guardians perhaps bitterly hostile. It was true that the power to vaccinate against the wishes of the guardians had existed for many years, but it had been in abeyance and its resuscitation might provoke very unfortunate contests. He hoped, therefore, that the amendment would be adopted.

The amendment was rejected by 17 votes to 11.

Colonel LONG pointed out that although a person who objected to vaccination would escape a second prosecution under Section 31 of the Act of 1867 he would be liable under Clause 29. He therefore proposed to remove the latter liability, though he regarded anti-vaccinationists as the victims of mistaken views.

Mr. J. W. WILSON appealed to the Government to assent to the amendment for the sake of consistency, their own profession being one of desire to save non-vaccinationists from repeated penalties.

The SOLICITOR-GENERAL, opposing the amendment, assured the Committee that persons convicted under Section 31 were never prosecuted under Section 29.

The amendment was negatived by 16 votes to 14.

Sir WM. PRIESTLEY moved to insert the words "As hereinafter provided," his purpose being to propose when the occasion arises the following consequential provision: "No proceedings under Section 31 of the Act of 1857 shall be taken against any person who has been convicted under Clause 29 on account of the same child until it has reached the age of five years, and if at that time the person in charge of the child still objects he shall make a statutory declaration of his objection and thereupon no order shall be made or proceedings taken with reference to the non-vaccination of the same child." Sir William Priestley thought this might be regarded as a reasonable concession to the anti-vaccinationists. When a child reached the age of five years the objection of the parents to vaccination might have ceased, especially as it might be thought that a five-year old child would bear the operation more easily than an infant; moreover, during the first five years of life the danger from small-pox was incurred chiefly by the family, but afterwards it was one for the whole community, because children five years old were often ready to go to school. This fact was made clear at Gloucester. Children caught the small-pox at school, whence it spread like a great conflagration. He offered his amendment as a compromise, being so anxious to prevent small-pox that he would willingly conciliate opposition if he could.

Mr. CHAPLIN could not agree to the amendment, which would not, he believed, conciliate opposition.

The amendment was, however, carried by 17 votes to 12, the consequential provision being left for future consideration.

Mr. LOGAN moved that there should be only one prosecution in a family instead of one for each child.

Mr. CHAPLIN resisted the proposal as likely to increase the number of unvaccinated children.

Sir WALTER FOSTER did not believe that prosecutions promoted vaccination. Every man so treated made twenty converts against the law. He went about as a missionary. If he were imprisoned he was met on his release by a brass band and held up as a man suffering from what was called an infamous law. He (Sir Walter Foster) thought these agitations detestable. He did not want them to occur and he believed the amendment would help to stop them.

The amendment was rejected by 15 votes to 12, after which a proposal by Mr. BRIGG that the fine for resistance to vaccination should

not exceed 5s. including costs (instead of 20s.) was negatived by 18 votes to 17. Clause 2 was then added to the Bill.

Clause 3 reads: "The Local Government Board shall have the same powers of making rules and regulations with respect to public vaccinators (whether under contracts made before or after the passing of this Act) as they have with respect to vaccination officers, and any rules or regulations made by the Board with respect to vaccination, whether under this or any other Act, shall while in force have effect as if enacted by this Act."

MR. CHAPLIN, explaining that the form of the clause had given rise to ungrounded suspicion, proposed to change it to the following:—"The Local Government Board may make rules and regulations with respect to the duties and remuneration of public vaccinators, whether under contracts made before or after the passing of this Act."

A discussion as to whether this proposal should not be postponed till the next sitting lasted till the Committee rose.

Appointments.

Successful Applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.*

ALCOCK, R., M.B., Ch.B. Vict., has been appointed an Assistant Honorary Surgeon for the North Staffordshire Infirmary.

ANDERSON, F., M.B., M.S. Edin., has been appointed a Resident Medical Officer for the York Dispensary.

ASHTON, GEORGE, M.B., Ch.B. Vict., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Assistant Medical Officer for the London County Asylum, Claybury.

BAIGENT, WILLIAM, M.D. Durh., B.S., has been appointed Medical Officer of Health by the Northallerton Urban District Council, vice C. Tweedy, resigned.

BOWMAN, C. CLARK, L.R.C.P. and S. Edin., has been appointed a Medical Referee under the Workmen's Compensation Act for the County Court Districts of Alnwick and Rothbury.

BROWNE, H. W. L., L.R.C.P., F.R.C.S. Edin., M.R.C.S., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for No. 85 County Court District, which includes Wolverhampton, West Bromwich, Dudley, and Walsall.

BURTON, C. G., M.R.C.S., L.R.C.P., has been appointed Resident Medical Officer for the North-Eastern Hospital for Children, Hackney-road, Shoreditch.

CANT, W. J., L.R.C.P. Lond., M.R.C.S., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the County Court Circuit No. 17, which includes Lincoln, Gainsborough, Horncastle, and Market Rasen.

CLAYTON, W. K., M.D. Brux., L.R.C.P., L.R.C.S. Edin., of Wakefield, has been appointed a Medical Referee for County Court Circuit No. 14.

COSENS, WM. BURROUGH, L.R.C.P. Lond., M.R.C.S. Eng., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the Dorset County Court Circuit No. 55 (the whole Circuit).

CUFF, ARCHIBALD, B.A., M.B., B.C. Cantab., F.R.C.S., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the County Court District No. 13, comprising Sheffield and Rotherham.

EVANS, EVAN, M.B., D.P.H. Camb., F.R.C.S., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for County Court Circuit No. 31, Carmarthenshire, &c.

FOSTER, J. J., M.B., M.R.C.S., L.R.C.P., has been appointed House Surgeon for the North-Eastern Hospital for Children, Hackney-road, Shoreditch.

FREMLIN, H. S., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Senior Laboratory Assistant at the new Calf Lymph Establishment at the British Institution of Preventive Medicine, near Chelsea Bridge.

GROSVENOR, W. W., B.A. Camb., M.D. Dubl., has been appointed Physician for the Children's Hospital, Gloucester, vice W. M. Hope.

HAIR, ALLAN, M.R.C.S., L.R.C.P., has been appointed House Physician for the North-Eastern Hospital for Children, Hackney-road, Shoreditch.

HAMILTON, T., B.A., M.B., B.Ch., B.A.O. R.U.I., has been appointed a Medical Assessor for the Districts of Newport, Chepstow, Pontypool, and Usk, under the Workmen's Compensation Act.

HARDY, H. NELSON, L.R.C.P. Edin., F.R.C.S. Edin., M.R.C.S., of Dulwich-grove, S.E., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897.

HATTON, G. S., M.D. Durh., F.R.C.S. Edin., M.R.C.S., has been appointed a Senior Surgeon for the North Staffordshire Infirmary, vice J. Alcock.

HICKS, E. BULLER, JUN., L.R.C.S., L.R.C.P., L.F.P.S. Glasg., has been appointed Medical Officer for the Easingwold Union Workhouse, and District Medical Officer and Public Vaccinator.

HOPE, W. M., M.R.C.S., has been appointed Surgeon for the Children's Hospital, Gloucester, vice W. Washbourn.

HOWELL, J., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Medical Officer to the Trimsaran Steel Works and Collieries, Kidwelly, South Wales.

HUNT, L. G., M.D. McGill Coll., Montreal, L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Headquarters Homes of the Sheffield Union.

JACKSON, W. R., M.B., M.S. Edin., has been appointed Medical Officer for the Second and Fifth Sanitary Districts of the South Molton Union.

LAURIE, L. V., M.B., M.S. Edin., has been appointed Medical Officer for the Moretonhampstead Sanitary District of the Newton Abbot Union.

LEWARNE, F., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Cricklade Sanitary District of the Cricklade and Wootton Bassett Union.

LITTLER, R. M., F.R.C.S., D.P.H. Vict., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the County Court Circuit which embraces the Southport and Ormskirk County Court Districts.

LONGWORTH, STEPHEN, G., L.R.C.P., L.R.C.S. Irel., has been appointed Senior Assistant Medical Officer for the Suffolk County Asylum.

LUSH, WILLIAM GEORGE VAWDREY, M.D., F.R.C.P., F.R.C.S., of Weymouth, has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for County Court Circuit No. 55.

MACDONALD, J., M.B., C.M. Edin., has been appointed a Medical Manager for the Northern Infirmary, Inverness.

MAGRATH, H. G., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Third Sanitary District of the Wimborne and Cranborne Union.

MASON, F. W., L.R.C.P. Lond., M.R.C.S., has been appointed Resident Medical Officer for the York Dispensary.

MURPHY, JAMES, M.A., M.D., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the Durham County Court Circuit No. 2.

PEARSON, R. S., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health by the Wigan Rural District Council.

PHILLIPS, G. A., M.R.C.S., L.S.A., of Walsall, has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for County Court Circuit No. 25.

SHAW, W. H. C., M.B., C.M. Camb., has been appointed Medical Officer for the Fourth Sanitary District of the Bedminster Union.

SOPER, R. W., M.R.C.S., has been re-appointed Medical Officer by the Dartmouth and Totnes Port Sanitary Authority.

STANSFIELD, T. E. KNOWLES, M.B., C.M. Edin., has been appointed Medical Superintendent for the London County Asylum, The Heath, Bexley, Kent.

STEPHENSON, G. S., M.D. Edin., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the County Court District of North Lincolnshire, which includes Grimsby, Barton-on-Humber, Brigg, Caistor, and Louth.

SYDENHAM, G. F., M.R.C.S., has been appointed Medical Officer for the Third Sanitary District of the South Molton Union.

THOMPSON, C. J., L.R.C.P. Edin., M.R.C.S., has been appointed Medical Officer for the Calborne Sanitary District of the Isle of Wight Union.

THOMSON, H. CAMPBELL, M.D., M.R.C.P. Lond., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for County Court Circuit No. 43.

UPPLEBY, J. G., L.R.C.P. and S. Edin., has been appointed District Surgeon for Port Elizabeth, South Africa.

VACHELL, CHARLES TANFIELD, M.D. Lond., M.R.C.S., L.R.C.P. Lond., L.S.A., J.P., has been appointed a Medical Assessor to the Cardiff District under the Workmen's Compensation Act.

WALL, C. P. B., M.B., Ch.B. Edin., has been appointed a House Surgeon for the Northern Infirmary, Inverness, vice J. G. Sibbald, resigned.

WHITEFORD, C. HAMILTON, M.R.C.S., L.R.C.P., has been appointed Medical Referee under the Workmen's Compensation Act for the County Court District No. 58 (Plymouth and Stonehouse).

WILLIAMS, D. J., F.R.C.S. Eng., has been appointed a Medical Referee under the Workmen's Compensation Act in the Llanelly County Court District.

WILLIAMS, W. E., F.R.C.S. Edin., L.S.A., has been appointed a Medical Assessor under the Workmen's Compensation Act for Ross, Monmouth, Abergavenny, Crickhowell, and West Monmouthshire.

WOODS, H. H., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Fourth Sanitary District of Lymington Union.

WORTH, C. A., L.R.C.P. Lond., M.R.C.S., has been appointed a House Surgeon for the Loughborough General Hospital, vice A. E. Palmer, resigned.

WRIGHT, C. J., PROFESSOR, M.R.C.S., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the Leeds District of County Court Circuit No. 14.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ANCOATS HOSPITAL, Manchester.—Resident Senior House Surgeon. Salary £80, with board and washing.

CANCER HOSPITAL (FREE), Fulham-road, S.W.—House Surgeon for six months. Salary at the rate of £50 per annum, board and residence.

CARLISLE DISPENSARY.—House Surgeon. Salary £130 per annum, with apartments (not board). Applications to Hon. Secretary, Riverahill, Stanwise, Carlisle.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant.

DONCASTER GENERAL INFIRMARY AND DISPENSARY.—Resident Dispenser and Assistant to the House Surgeon. Board, lodging, and washing provided, and an honorarium at the rate of 20 guineas given conditionally.

LAGOS GOVERNMENT RAILWAY.—Assistant Medical Officer on the Railway under construction by the Government of Lagos, West Africa. Salary £30 per month. First-class passage out and home. Full salary from date of arrival; half-pay during voyages. Quarters or allowance in lieu thereof. Applications to the Crown Agents for the Colonies, Downing-street, London, S.W.

MANCHESTER EAR HOSPITAL.—Clinical Clerkship for a Senior Student for six months. Honorarium 10 guineas.

OWENS COLLEGE, MANCHESTER.—A Senior and Junior Demonstrator in Physiology. Stipends £150, rising to £200, and £100, rising to £150.

PARISH OF NEWABBEY, DUMFRIES.—Medical Officer and Public Vaccinator. Salary £50 per annum to to provide medicine and surgical appliances to pauper patients gratis. Applications to Captain Stewart of Shambellie.

RIPON DISPENSARY AND COTTAGE HOSPITAL, Ripon.—Resident House Surgeon and Dispenser, unmarried. Salary £70 first year, and advancement after, with board and lodging.

ROYAL FREE HOSPITAL, Gray's-inn-road, London.—House Physician for six months. Board, &c., provided. No salary.

SHAFTESBURY HOUSE PRIVATE ASYLUM, Formby, near Liverpool.—Junior Medical Officer. Salary £50 per annum, with board, lodging, and washing. Applications to S. A. Gill, M.D., Formby, Lancashire.

STROUD GENERAL HOSPITAL. — House Surgeon. Salary £80 per annum, with board, lodging, and washing.

SUFFOLK COUNTY ASYLUM, Melton, Suffolk.—Second Assistant Medical Officer for three years, unmarried. Salary £100 a year, with board, lodging, washing, and attendance.

SUFFOLK GENERAL HOSPITAL, Bury St. Edmund's.—Honorary Assistant Medical Officer.

SURREY COUNTY LUNATIC ASYLUM, Brookwood, near Woking.—Temporary Assistant Medical Officer for about four months. Salary at the rate of £100 per year, with apartments, and all found.

UNIVERSITY OF GLASGOW.—Lecturer on Materia Medica and Therapeutics. Salary £150 per annum (being £100 for the Winter Session and £50 for the Summer Session).

UNIVERSITY OF ST. ANDREWS, St. Andrews.—Professors of Materia Medica and Pathology to conduct classes at Dundee.

VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street, Hull.—Lady House Surgeon. Salary £50 per annum, with board and laundry.

VICTORIA UNIVERSITY (THE YORKSHIRE COLLEGE, LEEDS): DEPARTMENT OF MEDICINE.—Professor of Materia Medica, Pharmacology, and Therapeutics. The emoluments are from fees alone.

Births, Marriages, and Deaths.

BIRTHS.

CULMER.—On June 19th, at Headington, Oxford, the wife of J. W. Culmer, M.R.C.S., L.R.C.P., of a son.

GREENWOOD.—On June 27th, at "Riseley," Bush-hill-park, Enfield, the wife of George Greenwood, M.R.C.S., L.R.C.P., of a daughter.

HILLS.—On June 26th, at Cathcart-road, South Kensington, the wife of William C. D. Hills, M.R.C.S., L.R.C.P., of a son.

SAUNDERS.—On June 16th, at Deddington, Oxon., the wife of Henry Saunders, B.A. Cantab., M.R.C.S., of a daughter.

SMYTH.—On June 25th, at The Beeches, Shenley, Herts, the wife of R. V. Beatty Smyth, M.A., M.D., of a daughter.

MARRIAGES.

HORSBURGH—CRAIGIE.—At St. George's, Edinburgh, on June 28th, by the Rev. Archibald Scott, D.D., minister of the parish, James Henry Horsburgh, M.B., B.Sc., Musselburgh, eldest son of the Rev. Andrew Horsburgh, M.A., Bengal, Chaplain R.L., to Isabella Riddle Glover, eldest daughter of James Glover Denham, 27, Castle-terrace, Edinburgh, and widow of James Craigie, M.D., B.Sc.

KENT—PARSONS.—On June 27th, at St. James's, Kidbrook, Sydney Kent, B.A., M.B., B.C. Cantab., M.R.C.S., L.R.C.P., son of the late William Kent, of Johndaryan, Queensland, to Katharine Louisa Maud Parsons, fifth daughter of the late Perceval M. Parsons, M.I.C.E., of Melbourne House, Blackheath, Kent.

LOUGH—FROST.—On June 21st, at the Church of St. Cuthbert, Thetford, George J. Lough, L.R.C.P.I., of Hastings, to Florence, only daughter of Edward Frost, Esq., of Thetford, Norfolk.

MACLEOD—DAVIES.—On June 22nd, at St. Nicholas Church, Leicester, by the Rev. Edward Atkins, B.Sc., and the Rev. A. P. Dawson, M.A., Alexander Lewis Macleod, M.A., M.B., C.M., to Fanny Elizabeth, daughter of Edward Davies, Esq., R.I., of Leicester. At home, 58, Hinckley-road, Leicester, Aug. 10th and 11th.

MITCHELL—SUTTER.—On June 23rd, at Holy Trinity Church, South Hetton, Thomas Ellis Mitchell, B.A., M.B., B.C. Cantab., Oldhill, Staffs., to Mary Helena, third daughter of George Skelton Sutter, Esq., of Port Elizabeth, South Africa.

DEATHS.

CASE.—On June 15th, at Folkestone, Henry Case, M.R.C.S., L.S.A., late Medical Superintendent, Metropolitan District Asylum, Leavesden, and formerly Lecturer on Psychological Medicine, Middlesex Hospital.

DORAN.—On Sunday, June 26th, at 9, Granville-place, W., Emma Mary Harrington, widow of Dr. John Doran, F.S.A., in her 88th year.

NICOL.—On June 22nd, at 12A, Clarendon-road, Leeds, James Main Nicol, M.R.C.S., L.R.C.P., L.D.S., aged 27 years.

RUSSELL.—On June 21st, at Bareilly, Bengal, Archibald William Forbes Russell, M.A., M.B., I.M.S., third son of Alexander Elliott Russell, late B.C.S., aged 29 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 30th, 1898.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
June 24	29·70	S.W.	0·15	86	62	55	56	57	Raining
,, 25	29·47	S.W.	0·10	113	66	54	55	58	Cloudy
,, 26	29·57	S.W.	0·07	106	63	50	53	58	Cloudy
,, 27	29·74	N.	0·08	105	64	53	55	58	Cloudy
,, 28	30·00	N.	...	102	69	52	52	57	Cloudy
,, 29	30·01	W.	0·04	124	77	55	56	61	Fine
,, 30	30·06	S.W.	...	82	66	59	59	61	Overcast

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M., Ophthalmic 1.15 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), Westminster (2 P.M.).

TUESDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.).

WEDNESDAY (6th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.).

THURSDAY (7th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.) University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.).

FRIDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.).

SATURDAY (9th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (6th).—OBSTETRICAL SOCIETY OF LONDON.—8 P.M. Specimens will be shown by Dr. Blacker, Dr. Pembrey (introduced by Dr. A. Routh), Dr. Spencer, Dr. Foulerton (introduced by Mr. Bland Sutton), Dr. Dysart M'cCaw, and Dr. Wise. Papers:—Dr. A. W. W. Lea: The Sagittal Fontanelle in the Heads of Infants at Birth.—Dr. G. Roper: Note on some Difficult Cases of Fronto-anterior Positions of the Fœtal Head.

FRIDAY (8th).—OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-sq., W.).—8 P.M. Card Specimens. 8.30 P.M. Papers: Mr. R. Cross: Subconjunctival Blood-letting for Hæmorrhagic Retinitis.—Dr. A. Turner: Some Points bearing on the Conjugate Movements of the Eyes.—Mr. S. Snell: (1) Large Cyst of the Conjunctiva; (2) Chancre of the Lacrymal Sac. At the close of the Ordinary Meeting the Annual Meeting for the Election of Officers of the Society will be held.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (4th).—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Mr. Wyatt Wingrave: Morbid Growths of the Nasal Septum.

TUESDAY (5th).—NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Bloomsbury).—3.30 P.M. Mr. Ballance: Lecture.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM (73, Welbeck-street).—4.30 P.M. Dr. T. D. Savill: On Methods of Electrical Diagnosis and Treatment in Diseases of the Nervous System.

WEDNESDAY (6th).—HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Dr. S. Martin: Causes of Cardiac Hypertrophy.

WEST LONDON POST-GRADUATE COURSE (West London Hospital, W.).—5 P.M. Dr. J. B. Ball: Throat Cases.

THURSDAY (7th).—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL (Gray's Inn road, W.C.).—5 P.M. Dr. D. Grant: Mastoid Operations

CHARING-CROSS HOSPITAL.—4 P.M. Dr. Abercrombie: Demonstration of Medical Cases. (Post-graduate Class.)

Notes, Short Comments, and Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND, WHEN ACCOMPANIED BY BLOCKS, IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1898, which was completed with the issue of June 25th, and the Title-page to the Volume are given in this number of THE LANCET.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1898 will be ready shortly. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are now ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

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GYNÆCOLOGISTS IN FICTION.

THE June number of *L'Écho du Bien*, a journal of philanthropic and charitable work, devotes some space to a notice of a recent French novel, "Les Florifères," the authoress of which (for it is said to be written by "un bas bleu") has allowed her imagination to run riot in a morbidly fantastic way. One of the personages depicted in these pages is a medical man who is described as "ovariotomiste spoliateur d'ovaires de mondaines détraquées par la folle de la jouissance sans complication fâcheuse, type nouveau qui tend à se répandre dans une inquiétante proportion. Elles sont telles que certains arbustes créés par la culture moderne, aux admirables fleurs qui ne rapportent pas de fruits. Au milieu de ces mondaines florifères apparait la silhouette du docteur Trajan, opérateur adoré de ses clientes, qui vit de leurs faiblesses, les exploite et les opère sans pitié; quant à lui il épousera une belle fille, saine et vigoureuse, de la province, pas florifère du tout et très fructifère, qui lui donnera de beaux enfants. C'est le type du gynécologiste mondain qu'on montre entre le diseur de monologues et la princesse à la mode. On aura son castreur comme on a son coiffeur et son pédicure, et le docteur Trajan mettra bientôt sur ses cartes de visites, en sous-titre, *opérateur de la Princesse X. et de la cantatrice Y.* La mode est à la stérilité, aux hanches amincies, aux tailles d'éphèbes souples et insexuées. On se fait débarrasser de ses ovaires, en une certaine classe, comme on se fait percer les oreilles."

"ANNUAL ERYSIPELAS."

To the Editors of THE LANCET.

SIRS,—Having had a similar experience to that mentioned by "M.B. and C.M." in THE LANCET of June 25th it may interest him to know the explanation of these occurrences which presented itself to me and the inferences I drew as to the most likely method of putting an end to the series—viz., that an attack of erysipelas in these patients only gives immunity for a period of something less than twelve months; that their dwellings and wearing apparel become thoroughly infected and that they are reinfected by them; and that the reinfection takes place either during the "clearing down" which occurs next after they cease to be immune or on their resuming the wear of those garments which they were using when the previous attack supervened. In the one case the attacks might probably occur at or about the "spring cleaning"; in the other at the time when summer garments are donned. At both of these epochs there is, I have reason to believe, ample opportunity of meeting with the predisposing chill. The inferences as to prevention are obvious—change or thorough disinfection of the residence, destruction of all infected garments which cannot be efficiently sterilised, and sterilisation of those which can.

I am, Sirs, yours faithfully,

Blackpool, June 27th, 1898. LEONARD MOLLOY, M.A., M.D. Dub.

JUVENILE TRAIN-WRECKERS.

ON June 19th two small boys, aged respectively nine and ten years, were charged at the North London police-court with trying to upset a train by placing a piece of iron and a piece of wood in the catch points. Evidence was given to the effect that in some places the wall which protected the line was so low that children could easily get over. Mr. D'Eyncourt ordered both the little urchins to be birched. The spread of education may be a very noble thing, but it does not seem to have much effect in softening the manners of the rising generation or in preventing them from being savage. The mere attempt to upset a train is such a very serious offence that it should be correspondingly severely punished, and in the case of an adult, whether it succeeds or not, it should certainly rank as manslaughter, even if it should not be considered a capital offence. But the "soaring human boy" must be appealed to through his sense of pain and there must be no sparing of the rod.

THE PAYMENT OF LOCUM TENENTS BY PUBLIC BODIES.

To the Editors of THE LANCET.

SIRS,—I have lately received notice from three public lunatic asylums of vacancies for locum tenents, each offering two guineas a week with board and lodging. It seems a curious contrast that a struggling general practitioner has to pay a locum not only three guineas a week, but also fares and frequently agents' fees, and the contrast does not reflect credit on the responsible asylum authorities. I hope that others will follow my example and refuse to accept such ridiculously small remuneration for what is to most men trying work. If smaller fees than usual are taken by the locum tenents let them favour the poor doctor and not the public bodies who pay their permanent medical officers highly. I am, Sirs, yours faithfully,

June 21st, 1898. LOCUM.

ROBINSON'S MENE TOWELS FOR LADIES.

WE have received samples of various sizes and qualities of towels for ladies' use made by Messrs. Robinson and Sons of Fann-street, E.C., and Chesterfield. They consist for the most part of absorbent cellulose wadding enclosed in gauze, with a layer of absorbent cotton in front and a thickness of waterproof wool on the back, the whole being sterilised by treatment with 1 in 2000 sublimate solution. Cellulose wadding has a high absorptive and diffusive power for liquids and even when thoroughly wetted is retained in shape by the other fibrous materials associated with it. No. 1 towel (the smallest) is about 9 in. long and is suitable for all ordinary cases; it is sold at the low price of 6*d.* per dozen. No. 2 and No. 3 are somewhat thicker and about 10 in. long; they are especially useful when travelling or when changing is inconvenient The prices of No. 2 and No. 3 are 1*s.* and 1*s.* 6*d.* per dozen respectively.

HUNTER'S PATENT AUTOMATIC GRIP AND SPLINT.

THIS instrument is used for the secure fastening of obstetric binders or wide bandages in general, allowing an easily controlled support or compression without the use of pins, straps, hooks, buttons, &c. It consists of a gently curved metal plate about 11 in. long and 1½ in. wide, pierced with a slot about 10 in. long, having a row of 26 sharp points projecting from each edge. The two ends of the bandage, after being drawn through the central slot and tightened as required

by pulling in opposite directions, are fixed by being pressed against the sharp points, which easily penetrate the material, and are then covered with a thin plate of flexible steel, so that there is no possibility of accidental contact with them. This fastener will obviously act somewhat as a splint in preventing the uncomfortable wrinkling up to which wide bandages are so liable. For obstetric purposes an ordinary strip of thin bleached cotton swansdown calico, the width of the slot in the grip, can be used for the binder over an ordinary towel folded to form the pad. It may also be employed for keeping large poultices, &c., comfortably in position. The grips can be disinfected by boiling when required. They may be obtained from any dealer in surgical instruments or from the patentee and manufacturer, B. Hunter, 22, Lancashire-road, Bishopston, Bristol. The price is 15*s.* 6*d.*

"THE ARTHUR JEFFARES BARLOW FUND."

To the Editors of THE LANCET.

SIRS,—Will you please acknowledge in THE LANCET the following donations to the Barlow Fund:—Per Dr. J. W. Moore—"A Sympathiser" (Putney), £2 2*s.* T. C. D., £1 1*s.*

I am, Sirs, yours faithfully,

June 27th, 1898. R. H. CAPPER

THE INTERPRETATION OF AN AGREEMENT.

To the Editors of THE LANCET.

SIRS,—Do you or any of your readers who may have had a similar experience consider one has any redress under the following circumstances? A purchases from B a cash practice, with a verbal undertaking from B that he has an agreement with his assistant (who has carried on the practice entirely for some years) not to practise in the neighbourhood. For certain reasons the assistant was not retained by A, and instead of seeking other employment he takes a room on the same premises, and after an interval of three months opens a surgery a few doors away and solicits the patients, with the result that the practice purchased by A is practically valueless. On applying to the agent for the agreement A finds that the assistant was simply bound down for three months not to practise within a quarter of a mile. Is this a reasonable agreement and likely to stand if contested? Any comment on the above will be gratefully received by

Yours faithfully,

June 28th, 1898. EMPTOR.

MEDICAL REFEREES UNDER THE WORKMEN'S COMPENSATION ACT.

To the Editors of THE LANCET.

SIRS,—I beg to enclose you a copy of the *Llanelly Mercury* of June 23rd announcing the appointment of a local medical man as a medical referee under the Compensation Act of 1897. As a junior member of the profession, living in the same town, I may, perhaps, be allowed to observe that the method of announcing the fact, coupled with the insertion of the letter from the Home Secretary, scarcely reflects dignity upon the medical man in question, nor is it calculated to inspire the rest of his professional brethren with the necessary respect due to his office. I should hardly think either that the Home Secretary intended his letter for publication in local papers. I should be glad to have an expression of your opinion on this subject.

I am, Sirs, yours faithfully,

June 28th. NEMO.

*** We agree that the method in which the appointment has been made public by the *Llanelly Mercury* is unfortunate, but we do not see any evidence that the medical man desired the letter from the Home Office to be printed, and it seems impossible for lay papers to understand the forms of medical etiquette.—ED. L.

THE LATE DR. JAMES McGREGOR LAING.

WE have received from Dr. J. Pickett and Dr. Reginald Hartley a list of subscriptions which have been made to a fund for the widow of the late Dr. Laing. We shall publish the names next week.

THE VALIDITY OF A DEATH CERTIFICATE.

To the Editors of THE LANCET.

SIRS,—A few days ago I certified as the cause of death in a child eight months old as follows: "Primary: meningitis. Secondary: convulsions." On the presentation of the certificate at the Registrar's office the mother was questioned as to the child being insured and on replying in the affirmative was informed that no insurance office would pay on the certificate without an inquest and conducted her to the coroner's court, where she was interrogated and an inquest ordered. I should be obliged if you will inform me—(1) was not this certificate ample to satisfy the Registrar-General? (2) is it not usual to call a medical man to give evidence in such a case (I had no doubt at all as to the case and no suspicion that all was not right)? and (3) has the coroner a right to order an inquest over a medical man's head in this manner?

I am, Sirs, yours faithfully,

June 24th, 1898. PERPLEXED.

*** 1. No doubt the certificate would satisfy the Registrar-General. 2. We think the medical man should be called to give evidence. 3. In our opinion the coroner was quite within his right, and we go further and say that he exercised a wise discretion. The insurance of infant life should be fenced around with every possible safeguard.—ED. L.

THE GARBAGE-MONGER.

ON June 23rd Herbert Clarkson was sentenced to three months' imprisonment, without the option of a fine, for exposing unsound meat for sale. He had previously been convicted of a similar offence. This is a righteous judgment. Clarkson's offence is absolutely unpardonable and we should like to see the law amended so as to make the crime of exposing unsound meat or the intention of selling it for food on the same level as attempted murder. People who try to foist unsound meat as food are really poisoners and should be treated as such.

"HOLY WATER AND INFECTION."

To the Editors of THE LANCET.

SIRS,—With regard to your note on this subject in THE LANCET of June 18th it may interest some of your readers to know that, according to the *Semaine Médicale* of April 13th, 1898, Professor Vincenzi has found quite a collection of microbes in the holy water of one of the most frequented churches of Sassari (Sardinia). It contained, among others, Löffler's bacillus. The identity of this microbe was proved by cultures and by inoculations and it is important to note that at that time four cases of diphtheria (one of them fatal) had been observed at Sassari. I myself have seen a tramp washing his face in the holy water of one of the fashionable churches of the West-end.

I am, Sirs, yours faithfully,

June 22nd, 1898. J. KESER.

Questor.—The annual report of the British Medical Temperance Association gives the following information as to the numbers of medical men who are total abstainers and are connected with the Association:—

	Members.	Student Associates.	Associates.
England and Wales	294	116	2
Scotland	63	255	0
Ireland (Central)	37	41	0
,, (Northern)	46	12	1
Scotland	26	0	0
Total	466	424	3

W. R. S. would have been justified, in our opinion, in refusing to answer the clergyman's questions, and we should like to hope that in doing so he would have received the general support of the house committee. This opinion is based on our correspondent's account, but it is difficult to conceive circumstances which could modify it. We do not print this letter, as the case might be recognised and a worse violation of professional confidence so be brought about.

Dr. J. G. Bailey.—A portable acetylene lamp would, we think, answer the purpose much better. There are several makers of acetylene apparatus in Blackburn, Manchester, and Liverpool.

Mr. Cholmondeley Webb will find the information which he requires in Mr. A. H. Tubby's work, "Deformities: A Treatise on Orthopædic Surgery."

Sigma.—British American Ball Nozzle Co., 3, Farringdon-avenue, E.C.

Mr. Charles Thomas is recommended to consult his medical man.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received: *Western Gazette, Isle of Ely Advertiser, Southern Times, Scotsman, Eastern Daily Press, Sheffield Telegraph, North British Daily Mail, Newport Advertiser, Times of India, Pioneer Mail, Boston Independent, Leytonstone Independent, Accrington Observer, Architect, Liverpool Daily Post, Agricultural Gazette, Builder, South Wales Daily News, Croydon Guardian, Western Morning News, Devon Gazette, Yorkshire Post, Alnwick County Gazette, Walsall Observer, Bristol Mercury, Salisbury Journal, Newcastle Chronicle, Leeds Mercury, Elgin Courant, Cambridge Independent Press, Worcester Echo, Citizen, Birmingham Gazette, Glasgow Herald, Morning Leader, Yarmouth Mercury, Jewish Chronicle, Herald of Wales, Manchester Guardian, Lancaster Guardian, Yarmouth Advertiser, Leicester Post, Sussex Daily News, Hampshire Advertiser, Somerset Journal, Kidderminster Shuttle, Southern Times, Chester Chronicle, Lynn Advertiser, Portsmouth Times, Bournemouth Directory, Sanitary Record, St. Paul's, Ceylon Observer, Coventry Herald, Warrington Observer, St. Mary's Hospital Gazette, St. Bartholomew's Hospital Journal, Local Government Chronicle, Mining Journal, Hertfordshire Mercury, City Press, Reading Mercury, Local Government Journal, Weekly Free Press and Aberdeen Herald, Surrey Advertiser, Cambrian News, Medical Gazette, Llanelly Mercury, Derbyshire Times, Monmouth Observer, Lancashire Daily Express, Evening Chronicle (Newcastle-on-Tyne), West Middlesex Herald, Bacup Times, Aston Times, Lydney Observer, Stowmarket Courier,* &c., &c.

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X.—X. Y. Z., Derby.

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